# AVIATION

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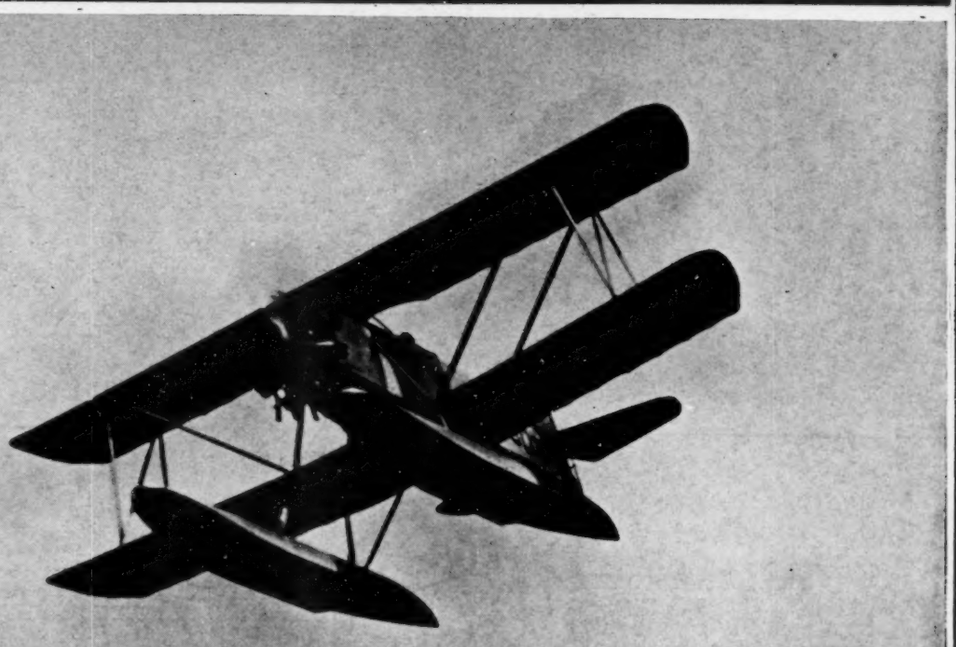

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VOLUME XV

NUMBER 3

## SPECIAL FEATURES

AN ITALIAN LIGHT PLANE
AVIATION AND CITY PLANNING
RESULTS OF NATIONAL BALLOON RACE
FOREIGN AIR ARMAMENTS AND THE UNITED STATES

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

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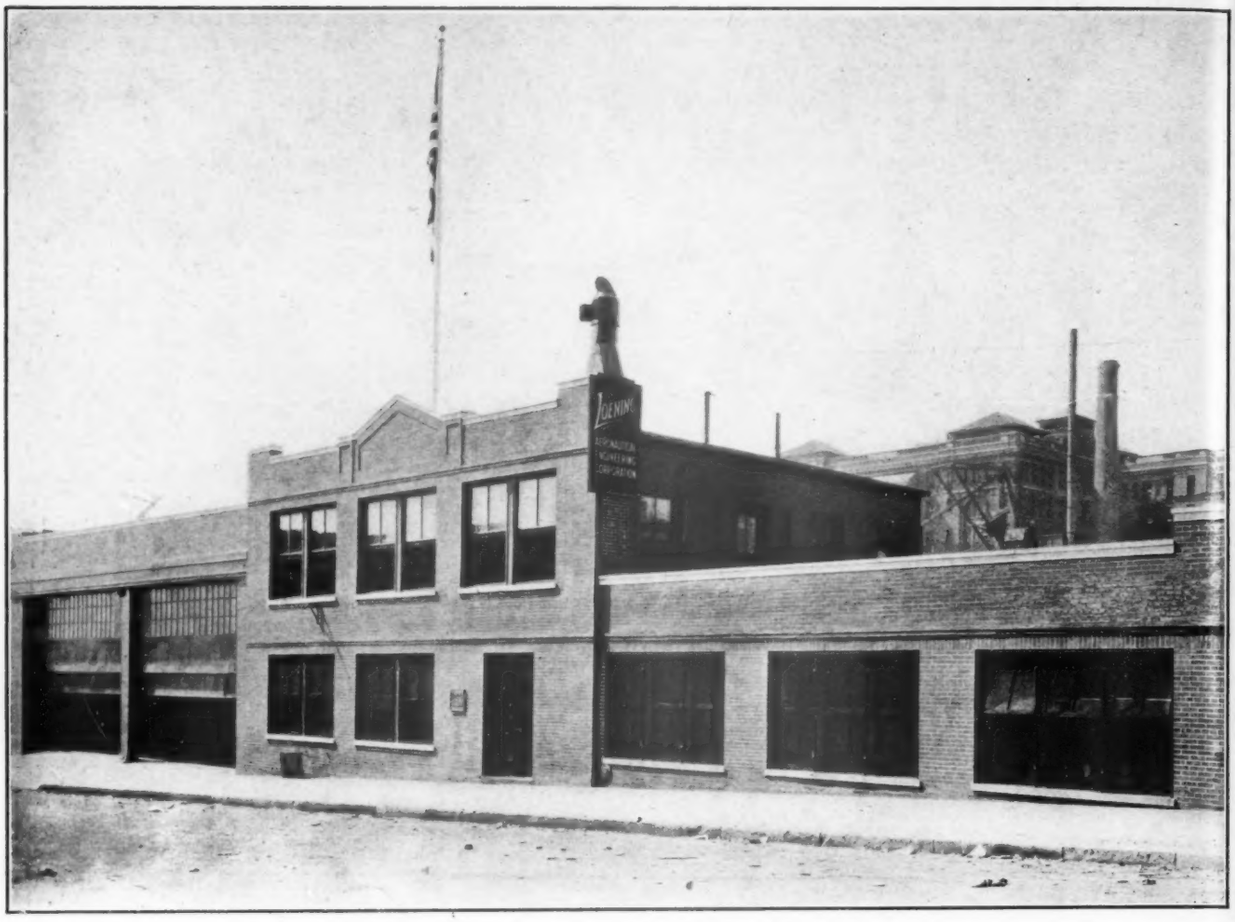


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JULY 16, 1923

# AVIATION

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## CONTENTS

Editorials ..... 65
Foreign Air Armaments and the United States .. 66
General Efficiency Curve for Propellers ..... 70
Flying Model of Fokker T2 ..... 70
Results of National Balloon Race ..... 71
Wright T2 Engine Passes 50 hr. Test ..... 71
Aviation and City Planning ..... 72
Bibliography of Aeronautics, 1917-19 ..... 72
An Italian Light Plane ..... 73
The Case of the "America" ..... 73
Model Airplane Tournament ..... 73
Airships, Inc. Plant Busy ..... 73
New Airplane Propeller ..... 73
A Visit to the Loening Plant ..... 74
Our Growing Fuel Consumption ..... 74
Military Aviation in Mexico ..... 74
Book Reviews ..... 74
Airports and Airways ..... 75
U. S. Army and Navy Air Forces ..... 77

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# AVIATION

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## Aerial Armaments

THERE should be great caution used in considering the aircraft rivalry between France and England. The wide publicity that is being given to it may have behind it a purpose that is not apparent to the public.

Two outstanding facts are not being emphasized. The first and most important is the growing conviction that the most economical form of warfare is in the air. The second point to be considered is the present military and naval control of all aircraft activities in practically all countries except England and Italy. Consequently there is a fear that the economical features of aircraft will tend to divert the military and naval appropriations to the expansion of the air force.

We read that Admiral Sims believes that "a bomb weighing 4,000 pounds with 2,500 pounds of T.N.T. would sink any battleship now built or likely to be built, if exploded within a few hundred feet of the hull" and Admiral Fullam states that air power "dominates in naval warfare. Sea power is absolutely dependent upon air power. It can be successfully exerted only through the medium of air power;" and these opinions are echoed by the distinguished English Admiral Sir Percy Scott. Admiral Moffat, Chief of the Bureau of Aeronautics of the Navy Department is aware of the changed conditions when he states that "aviation is dominating and controlling world conditions today. The overwhelming air force of France is enabling her to dictate terms. She is able to occupy German territory and hold it in defiance of the protests or action of any other power or powers."

Here we have four Admirals, all definitely stating that aviation is dominating future sea warfare and Admiral Moffat, when the subject of appropriations comes up, bewails the fact that only five per cent of the total naval budget is allowed his bureau. He says "out of three hundred and forty million dollars allowed for maintenance of the Navy, Naval Aviation is allowed less than fifteen millions. On this meager appropriation we have managed to struggle along and barely keep aviation afloat." Is it not evident that in naval circles there is a fear that the development of aircraft may have a dangerous effect on the ninety-five per cent?

The stand-pat naval opinion has been expressed by Rear Admiral William L. Rodgers, Head of the General Board and Senior Officer on the active list of the navy. Compare his statement with those above. He minimizes the role of aircraft by stating that "their importance upon which the public has fastened its attention arises from their impunity from pursuit by any other vehicle. This importance is greatly reduced when they are opposed by equally speedy enemies. When both sides have aircraft the role of aircraft on both sides sinks to an auxiliary only. Aircraft can be supreme only when possessed by one side only."

Evidently the Admiral has convinced himself that a "five per cent" naval air force that spends fifteen million dollars is adequate to protect the American Navy against any enemy aircraft attack.

When the military point of view is considered, it is more difficult to secure expressed opinions. The statement recently issued in Washington that a recommendation has been made to greatly increase our military air force and have some continuing aircraft program is encouraging. But it will not assist American aviation if it is not considered in the light of economy. Will a million dollars invested next year in coast artillery, cavalry, ordnance or infantry give equal results to the same amount spent in aircraft? The hardest trial of any department head is to cut his appropriations. When those who supervise the allocation of the army budget lack a vision of aerial warfare or are fearful of its development, the question of comparative economy becomes involved.

Economy has been the keynote of President Harding's administration. It is the policy of all nations now. Aircraft development should be considered from this viewpoint alone. Premier Baldwin has announced that "In conformity with our obligations under the Covenant of the League of Nations, the British Government would gladly co-operate with other Governments in limiting the strength of air armaments on lines similar to the Treaty of Washington in case of the navy, and any such arrangement, it is needless to say, will govern the policy of air extension."

Of course, from the standpoint of politics, it would be a great triumph to save any nation the necessity of spending appropriations for aerial defense. But, until statesmen are willing to discuss the limitation of the size of standing armies and the amount of military stores the nations are accumulating, it appears to be only putting a smoke screen to lay such great stress on competition in aircraft.

When money is spent for military or naval equipment, it seldom aids commercial development. With aircraft it is different. The great advance in speed, altitude, duration and power in airplanes while due to a desire to excel in the air, has made commercial aviation more practical. Untold sums were spent in developing railroad transportation. The entire amount of the appropriations for aircraft, while primarily for national defense, will be well invested if it advances the day when the advantages of air transport will be available to the entire country.

These facts cannot be too often reiterated. Economy of aerial warfare is certain to become a subject of wide discussion. Already attempts have been made to compare the cost of wartime aviation with the cost of a fleet of warships, but these statistical gymnastics will not becloud the fundamental issue. The public, informed as to the comparative economy and efficiency of aircraft, and noting the remarkable growth of Europe's subsidized commercial air services, will look with encouraging approval upon an adequate American Air Force.

# Foreign Air Armaments and the United States

## British Air Force to be Increased One and a Half Times, Making It Second Strongest in the World

BY LADISLAS D'ORCY

*"The agitation in England for a one-power air standard—that is, for a force equal to that of France—should be studied with concern by those responsible for a sound aviation policy in the United States."—Editorial in the New York Times of June 27, 1923.*

Stanley Baldwin, Prime Minister of Great Britain, announced in the House of Commons on June 26 that the British government had decided to establish a home defense air force sufficiently strong to defend the country adequately from attack by the strongest air force within striking distance. He declared that it was planned to add in the shortest possible time thirty-four airplane squadrons to the eighteen provided for home defense in the estimates passed last spring, which addition brought the authorized combatant strength of the Royal Air Force up to fifty squadrons. The further addition of thirty-four air squadrons would give the Royal Air Force a combatant strength of eighty-four squadrons, or at the peace time allowance of twelve machines per squadron, 1008 airplanes.

### *The British Air Increase*

The "strongest air force within striking distance" to which the Premier referred is evidently the French air force, which according to reliable sources of information now numbers over 1500 first line airplanes, and which is to be brought up to a total of 2000 planes within the next year or so.

Mr. Baldwin said that the home defense air force will be organized on a regular and permanent military basis and, in addition, on a territorial air reserve basis, so arranged as to insure that sufficient strength will be immediately available for purposes of defense. The fullest use will be made of civilian and labor facilities. The details of the organization will be framed also with a view to the possibility of subsequent expansion, but before any further development takes place the question will be reexamined in the light of the air strength of foreign Powers.

As explained by Sir Samuel Hoare, Secretary of State for Air, the yearly expenditure would average about £5,500,000, but this average would not be reached for three years. He estimated the expenditure this year would not exceed £500,000.

Mr. Baldwin concluded by stating that Great Britain, in conformity with her obligations under the Covenant of the League of Nations, would gladly coöperate with other Governments in limiting the strength of air armaments on lines similar to the Treaty of Washington.

As will be seen from the accompanying tables which were prepared by the staff of AVIATION from very recent and substantially reliable sources of information, the addition of thirty air squadrons would make of Great Britain the second air power in the world, a position the United States now enjoys, while France would still remain materially in the lead.

The importance of this subject of relative air power is so obvious at the present time, when all countries, large and small, begin to realize that a well organized air force is the cheapest and most effective means of national defense, that the question will be dealt with here in some detail. The accompanying tables give, for the first time since the Washington Conference on the Limitation of Armament, a comprehensive, tabulated view of the relative air strength of the Great Powers.

It will be seen from Table I, that at the present moment the United States is the second air power in the world. The relative standing of the Great Powers is compared on the basis of both the number of first line planes (which is exclusive of school planes) and the number of combatant airplane squadrons. By the latter term are meant pursuit, bombing, ground attack, torpedo, observation and scouting squadrons, but not school squadrons, nor what in this country are called "service squadrons", which in reality are air parks in the British and French parlance.

TABLE I. PRESENT AIR STRENGTH OF GREAT POWERS

| *Country* | *First Line Planes* | *Plane Sqdns.* | *Personnel* |
|---|---|---|---|
| France | 1562 | 174 | 37,730 |
| United States | 630 | 48 | 14,466 |
| Great Britain | 408 | 34 | 29,306 |
| Italy | 370 | 37 | 8,000* |
| Japan | 330 | 33 | 5,000* |

*Estimate.

In Table II the relative air strength of the Great Powers is shown as it will be in 1924 and 1925 when the present authorized and contemplated expansions will have become an established fact. It will be seen from this table that if American air power remains stationary during the next two years, our air strength will be exceeded by France, Great Britain and Italy. The air program of Japan is not definitely known, but judging by the last Japanese air appropriations alone, not to speak of other indicative factors, it is as well as certain that Japanese air power will not remain limited to thirty-three squadrons, but will be considerably increased. From this it would follow that by 1925 the United States will have dropped to fifth place among the leading air powers of the world.

TABLE II. AUTHORIZED AND CONTEMPLATED AIR STRENGTH OF GREAT POWERS

| *Country* | *First Line Planes* | | *Plane Squadrons* | |
|---|---|---|---|---|
| | *1924* | *1925* | *1924* | *1925* |
| France | 1800 | 2000 | 200 | 220 |
| United States | ? | ? | ? | ? |
| Great Britain | 600 | 1000 | 50 | 84 |
| Japan | ? | ? | ? | ? |
| Italy* | 720 | ? | 60 | ? |

*The number of plane squadrons authorized under the new air program is conjectural, and is based on the number of planes authorized to be built 1923-24.

Table III shows the types of planes which make up the combatant air squadrons of the Great Powers. The numbers include both army and navy squadrons where separate air services exist, as may be seen from appropriate foot notes.

TABLE III. TYPES OF PLANE SQUADRONS OF GREAT POWERS NOW IN SERVICE

| *Country* | *Purs.* | *Bomb., Torp. & Attack* | *Obs.* | *Total* |
|---|---|---|---|---|
| France | 54 | 48 | 72 (1) | 174 |
| United States | 13 (2) | 13 (3) | 22 (4) | 48 |
| Great Britain | | Not available | | 34 |
| Italy | 14 (5) | 3 | 20 (6) | 37 |
| Japan | | Not available | | 33 |

(1) Incl. 4 Naval Sqns.
(2) Incl. 3 Naval and 1 Marine Corps Sqn.
(3) Incl. 2 Naval Torpedo and Bombing Sqns.
(4) Incl. 4 Naval and 4 Marine Corps. Sqns.
(5) Incl. 4 Naval Sqns.
(6) Incl. 8 Naval Sqns.

Table IV gives the distribution of air squadrons of the Great Powers, as far as information is available. In this connection the following supplementary data will be of interest. Of the air forces stationed "overseas"—as explained in the relative foot notes—France has twenty-eight squadrons in North Africa (Algeria, Tunis and Morocco), eight in Syria, two in IndoChina and one in French West Africa; the United States has five in Hawaii, three in the Philippines, three in Panama, and one each in Guam, Santo Domingo and Haiti; Great Britain ten in Mesopotamia, six in India, four in Egypt,

and three in Palestine, with four temporarily at the Dardanelles; Italy has three squadrons in Tripoli and Bengasi, and Japan has three squadrons in Korea, in addition to two small police air squadrons in Formosa which do not appear in these tabulations.

It should also be noted that these tabulations do not include the existing ten American National Guard squadrons nor the Irish, Canadian, Australian and South African Air Forces, all of which may be regarded as skeleton organizations.

TABLE IV. DISTRIBUTION OF AIR SQUADRONS OF GREAT POWERS

| *Country* | *Home* | *Overseas* | *With Fleets* | *Total* |
|---|---|---|---|---|
| France | 131 | 39 | 4 | 174 |
| United States | 25 | 14 | 9 | 48 |
| Great Britain | 7 | 23 | 4 | 34 |
| Italy | 34 | 3 | 0 | 37 |
| Japan | 27 | 3 | 3 | 33 |

*Note.*—"Home" for France includes continental France and Corsica; "Overseas" includes all other possessions.
"Home" for United States includes the States and Territories within the continental limits of North America; "Overseas" includes all other possessions.
"Home" for Great Britain includes England and Scotland (no British Air Forces being stationed in Ireland); "Overseas" includes all other possessions exclusive of the self-governing Dominions.
"Home" for Italy includes continental Italy, Sicily and Sardinia with adjacent islands; "Overseas" includes Tripoli, Cyrenaica, Erythrea and Italian Somaliland.
"Home" for Japan includes the Japanese Islands proper with adjacent islands; "Overseas" includes Formosa and Korea.

It should further be added for a fair comprehension of the question of relative air power that the average allowance of planes per squadron varies a good deal in the different air forces. Thus, it is twelve in the U. S. Army Air Service, the U. S. Marine Corps Air Force, the Royal British Air Force and in the reorganization plan of the Italian Air Force, while it is eighteen in the U. S. Naval Aviation, ten in the present organization of the Italian Air Force and in the Japanese Air Services, and nine on the average in the French Air Services. All this must be kept in mind when comparing air power in terms of air squadrons alone. At the same time comparisons based exclusively on the number of first line planes in service are often misleading, for a squadron represents with its trained personnel an organization "in being"—to paraphrase Mahan—which can be expanded in time of war, whereas sheer numbers of planes, devoid of the tactical and moral organization into which they can be fitted, merely represent potential, not actual, fighting strength. Under the circumstances, the difficulty of which will not escape the reader's attention, the comparison of air power given in the accompanying tables is probably as reliable as it is humanly possible to make it unofficially at the present time.

### *Present Air Fleets*

There remain to be said a few words regarding the strategical organization of the air forces under review. Information on this subject is rather scanty, in particular as regards Japan and Italy.

The main striking force of the French Air Service consists: (1) of the First Air Division, with headquarters at Metz, which is composed of a Pursuit Brigade of twenty squadrons and a Day Bombing Brigade of twenty-four squadrons; (2) of a Night Bombing Brigade of twelve squadrons, with headquarters at Nancy; and (3) of a Composite Air Brigade, with headquarters at Chateauroux, consisting of ten pursuit and twelve day bombing squadrons. In addition to this force there are seven observation regiments consisting each of one headquarters, four or five observation groups of two squadrons each, and one pursuit group of four squadrons with the necessary photo section and air parks; an eighth observation regiment, stationed at Syria, only has eight observation squadrons and no pursuit group.

The strategical commands of the U. S. Army Air Service organized to date are the First Wing, with headquarters at Kelly Field, Tex., and the Second Wing, with headquarters at Langley Field, Va., which corresponds to the distribution of the air force along two fronts: the Mexican frontier and the Atlantic seaboard. The main striking force consists of the 1st Pursuit Group, composed of four pursuit squadrons, with headquarters at Selfridge Field, Mich.; the 2nd Bombardment Group, composed of three bombing squadrons, with headquarters at Langley Field, and the 3rd Attack Group, composed of four ground attack squadrons, with headquarters at Kelly Field. Composite Groups are stationed in Hawaii, the Philippines and the Panama Canal Zone.

The British Royal Air Force is organized in Home Commands and Overseas Commands, as follows. England and Scotland are divided into an Inland Area with two Groups which take in all the squadrons cooperating with the army, and into a Coastal Area with two Groups, in which are comprised all the squadrons cooperating with the navy for coast defense. The Overseas Commands comprise the Egyptian Group with headquarters at Cairo, which includes the Palestine Wing; the Mediterranean Group with headquarters at Malta; the Iraq (Mesopotamia) Command with headquarters at Bagdad; and the Indian Group with headquarters at Delhi.

The strategical organization of the new Royal Italian Air Force has not yet been made public, except that it is to include Air Fleet Commands, Air Division Commands, Pursuit Wings, Day and Night Bombing Wings, Observation Wings and Balloon Groups.

Little is also known of the war plans of the Japanese Air Forces. The Army Air Service is organized in six Airplane Battalions (groups) consisting each of three squadrons, and in one Balloon Battalion.

### *The German-Russian Enigma*

These brief notes will enable the reader to obtain a fairly comprehensive view of how the leading air forces of the world are organized today. It will be at once apparent, that the French air force has in particular been organized with a view to being capable of immediate offense with a powerful mass of pursuit and day bombing airplanes. The main objective of this air force is still an unknown equation represented by the German trained Russian air fleet of tomorrow, seconded by a German commercial fleet. This eventuality is ridiculed in many quarters on the ground that commercial airplanes cannot be converted into satisfactory military airplanes. But it is really not necessary to ascribe to the Germans dark designs in manufacturing commercial airplanes with the ultimate view of military use, nor believe reports of secret manufacture of bomb gears for installation in the commercial fleet, to see a potential menace in a German-Russian air combination. Even if the German commercial planes could not be used for bombing or observation purposes, they would make excellent troop carriers in case of war. Only the other day Sir Samuel Hoare, British air minister, described to the House of Commons how in Mesopotamia British troop carrying airplanes transported an infantry company with its full military equipment to a place which could not be reached by traveling over the ground. Such an example, multiplied a hundred or a thousand times, gives us an inkling of how a given territory may be invaded *and occupied* by a flying army transported in troop carriers and protected by pursuit machines.

Of course, a German troop carrying air fleet unprotected by a strong force of pursuit planes would be a negligible military factor, for it would fall an easy prey to hostile fighting machines. But this is just where Russia is supposed to furnish the missing link in the air organization. Whether German clandestine air armaments are a myth or not, Soviet Russia's bid for air power is an undeniable reality.

Statistical information will be published in the near future in AVIATION, showing the efforts Russia is making toward building up a powerful air force. In the meantime, it will be sufficient to cite a few significant incidents in support of this fact. Last winter, during a military review held in Moscow, Leon Trotsky, Soviet War Minister, exclaimed, pointing to the Red air squadrons flying overhead: "In the air all start alike, and there we shall not remain behind!" Shortly afterward the Junkers aircraft works of Dessau, Germany, were granted a concession for establishing a branch in Russia, and elaborate plans were drawn up by the general staff of the Red Air Fleet to supplement its serious lack of up to date equipment and qualified personnel. A national subscription was also started in behalf of a strong air force. It is not money alone that the Soviet government seeks to obtain by these means for it is actually engaged in educating the Russian masses to the value of air power. An appeal sent out

by the Workers and Citizens of Odessa is worth quoting in this connection: "The volunteer air fleet is the most secure guarantee of the integrity of the Republic and its safeguard against external aggression. Every airplane purchased with the money subscribed by the workers and citizens reinforces our army and our navy, and opens up large possibilities from the viewpoint of commerce by accelerating communications between the most distant sections of the country."

Still more recently, when Russia was having diplomatic difficulties with the British Empire, War Minister Trotzky made a speech in which he said: "If we are presented with an ultimatum, let us create a squadron of airplanes. If a *coup d'état* occurs in Bulgaria, let us form another airplane squadron, and if there is a *coup d'état* in Persia, let us build more airplanes." Under the same date the *New York World* reported that one German airplane company operating in Russia—Junkers in all likelihood—was under contract to turn out 3000 airplanes by April, 1924, of which number 1500 are said to be intended for use by the Turkish government to offset British air power in Mesopotamia and in India. That Russia has for some time past been making use of German engineering and military talent for building up a powerful air force has repeatedly been claimed by French observers. That this should now be confirmed by the *New York World*—who is anything but friendly to French policy and interests—is only the more significant. Curiously enough, British air circles seem strangely disinterested in Russia's great aircraft armaments, all their anxiety apparently finding its source in the size of the French air force. Whether this attitude is merely clever camouflage remains to be seen.

It is quite possible for instance that the French air force is pointed out as the menace to European peace merely for the purpose of making the British public realize that British sea power is already unable to protect the integrity of the British Empire, and that air power will have to take a large proportion of the duties now devolving upon the British navy. In an article entitled "Is England's Sea Rule Passing?" published by *McClure's Magazine* for July, 1923, Rear Admiral W. F. Fullam, U.S.N. (retired) says some pertinent things on this subject. He writes: "Air power did not appear at Jutland. As a naval arm it has only recently developed. Today it dominates in naval warfare. Sea power is absolutely dependent upon air power. It can be successfully exerted only through the medium of air power."

Realization, then, that air power in a few years will be synonymous with world power, just as sea power was in the past, seems to offer the real answer to the British anxiety at the size of the French air force. The following comments of London newspapers reflect various expressions of opinion on the question:

### The British Viewpoint

Commenting on the doubling of the Royal Air Force the *Star* of London says: "We regret it as we must regret every addition to the armament of nations. It is in effect, if not professedly so, an item in preparation for the next war. None but a fool will believe now that when we add to our armaments we are increasing the chances of peace. The key to the situation is France. France is piling up her air force on an insane scale. By the end of 1925 she will have about 2,000 machines. Against whom is this enormous force being prepared? It cannot be against Germany, since Germany has been disarmed. She may protest as much as she pleases, but since Germany has been wiped out there only remains England as a possible foe.

"It is the duty of the Government to take notice of this menace and it is at least plausibly arguable that the only practical way of doing so is the way it has chosen. The responsibility clearly lies with France."

The *Daily Chronicle* says: "Britain cannot be safe on less than a one power standard of air force. Every day's development makes it more certain that the next Armageddon, if there is one, will be decided almost wholly in the air. Britain is peculiarly vulnerable in air warfare which has deprived her of her insularity, and any power which can reach her in that element as a likely assailant is likely to be regarded seriously."

The *Times* says: "A race in air armaments between, for instance, Great Britain and France, to say nothing of Russia and her possible fleet of 10,000 airplanes, would be merely from an economic point of view ruinous folly of which no civilized nations should be capable. We believe this view would be held just as strongly in France as in Great Britain once our ally is convinced, as some day let us hope she may be, that her eastern frontier can be made secure by more reasonable means from foreign attack."

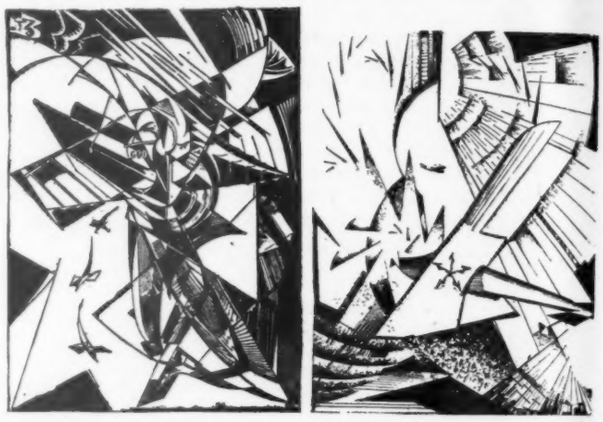
The *Morning Post* says: "Some of the most ardent champions of an increase of our home defence air squadrons have based their arguments on the superiority of the French aerial squadrons. The air forces of our ally, however, have as their justification the danger of some sudden aerial developments beyond the Rhine and the necessity of having at the disposal of France a force sufficiently powerful to bring revengeful Germany to reason."

The *Westminster Gazette* says: "We cannot close our eyes to the fact that we are embarking, despite the wishes of an overwhelming majority of the people, on a new competition in armaments. Premier Baldwin's statement only wins approval because of the conviction that he has been forced to adopt the present policy.

"In four short years, with every nation under the necessity of effecting the most stringent economies if there is to be any sort of recovery from the effects of the war, we are once more driven to take counsel of our fears and pile up armament afresh. The remedy lies in the hands of that power which began the race."

### The French Viewpoint

After the opinions of the English press, it is interesting to hear the French viewpoint of the question. Edwin L. James, in a copyrighted cable to the New York *Times*, writes as follows from Paris under June 27: "Paris receives kindly and confidently Prime Minister Baldwin's proposal for limitation of air armaments on lines similar to the treaty of Washington in the case of the navy. But competent observers here say



From *Red Air Fleet Messenger* (Moscow)

*Russian cubistic impressions of aviation—On the left, an aerial battle; on the right, the earth seen from a stunting airplane*

undoubtedly the French put a meaning on his words he did not intend and would not subscribe to. For the French argue that if air armaments are limited as naval armaments were the race will halt just where it is and apportionment will be applied in proportion to existing strength.

"With an air force much greater than any other nation, or any other two nations, such an arrangement would assure to France air supremacy for an indefinite time and give her over England an advantage in airplanes about comparable to the supremacy in capital ship tonnage the Washington Treaty gave England over France.

"Their argument is this:

"'At Washington Mr. Hughes proposed that the race in battleships stop where it was and that the standing of the nations' battleship fleets should be fixed on the basis of where they stood in November, 1921. That worked against France because during the war, while England, America and Japan were building ships as the best way to serve the common

cause, France made munitions for all the allies because that was how she could best serve the common cause.

"'France was caught unfairly with her battleship tonnage at low ebb and Hughes, Balfour and Kato, shut in a room without Frenchmen present, decided the common rule should apply to us.

"'Now it is proposed to limit air strength. If the Washington rule was good for battleships, let it apply now for airplanes. Let the wasteful race stop where it is. This time it is not America and England but France which has the advantage. Don't we deserve to profit by it? Americans spend money to build battleships and their fleet now equals England when once it was vastly inferior. France has spent money to build airplanes and isn't she entitled to reap the benefit of her standing? There is as much justice in our contention as in Mr. Hughes's limitation of battleships.'"

From *Red Air Fleet Messenger* (Moscow)

*The driving power behind the Red Air Fleet: Cubistic composition showing Leon Trotsky surrounded by swarms of airplanes*

"That is the French case. They do not believe their ideas will be accepted by England, but they say they certainly will not stand until England outstrips them and then proposes fixation on the basis of existing strength."

The *Gaulois* says: "Thus we see a new race in armaments with attention focussed today on an arm which in the next conflict will be a decisive arm. There may be an agreement to prevent this contest. Mr. Baldwin referred to it yesterday, but he added it should be on the basis of the Washington treaty. If that means France must lose her rank of a great air power as she was forced to lose her right as a great sea power, the French people would never submit."

### *The Matter of Appropriations*

The first apparent result of Premier Baldwin's announced decision to increase the strength of the Royal Air Force came three days later, when the French Chamber of Deputies raised the air force budget for the current year to 211 million francs. As originally presented to the Chamber, the budget called for a total expenditure of 230 million francs, namely, 180 millions for the army air service, and 50 millions for the naval air service. The Senate wanted to reduce these figures to 130 and 35 million francs, respectively, but upon intervention of the Under-Secretary for Air a total appropriation of 175 million francs was approved. The further addition voted by the Chamber of Deputies with the approval of the Finance Committee makes a total of 211 million francs appropriated for the French air forces and as it was further voted that this year's budget would also apply to 1924, the French aircraft industry has a two-year financial program ahead of it.

The study of air armaments would not be complete if it did not include a comparison of the current air force appropriations of the Great Powers. This is shown in Table V, which gives the air force appropriations of the Great Powers for the fiscal year 1923-24, except in the case of France, where the figures apply to the calendar year 1923. The table gives the amount of the appropriations both in the national currency and in their equivalent in the United States currency at the rate of exchange of July 3, 1923. It appears from this table that the British air estimates—which do not include Premier Baldwin's projected addition of thirty-four squadrons—are nearly four times those of France, and about three times those of the United States, while the French air estimates are $6,000,000 less than those of the United States. These statistics are, however, somewhat misleading, insofar as the exchange value of the European currencies now under par are not equivalent to their purchasing value at home. In other words, while 100,000 French Francs are at present only worth about $6,000 *in the United States,* their purchasing value *in France* is much higher, being probably twice that amount. At the same time, labor and materials are much cheaper in France than in this country, so that the French airplanes cost much less to build than American machines.

TABLE V. CURRENT AIR FORCE BUDGETS OF GREAT POWERS

| *Country* | *Amount Appropriated* | *U. S. Exchange Value* |
|---|---|---|
| Great Britain | £18,605,000 | $83,700,000 |
| United States | $27,660,000 | $27,660,000 |
| France* | F.361,000,000 | $21,660,000 |
| Japan | Y.42,000,000 | $21,000,000 |
| Italy | L.300,000,000 | $12,000,000 |

*Incl. F.150,000,000 for Civil Aviation.

But all of this does not dispose of the enormous figures of the British air force budget, which it is now proposed further to increase. As the pound sterling is now almost at par, the money appropriated for the Royal Air Force is actually about three times that authorized for our own Air Services. And yet the British Air Force has only thirty-four air squadrons to show against our forty-eight. An explanation of this seeming anomaly may be had from the fact that out of the $83,700,000 appropriated for the Royal Air Force only $16,200,000 or less than one-fifth is provided for actual construction of new aircraft. The rest of the British air force estimates evidently goes mostly into the numerous special air force schools which the British Air Ministry maintains for training large numbers of pilots, observers, bombers, gunners, radio experts, mechanics and riggers with a view to a huge and instant expansion of the air force in case of war. By actual count there are, in addition to other ground establishments such as the Royal Aircraft Establishment at South Farnborough and the Airplane Experimental Establishment at Martlesham Heath, twenty of these schools, the list of which follows:

R.A.F. SCHOOLS

Central Flying School, Upavon.
Flying Training Schools (six).
Seaplane Training School, Lee-on-Solent.
Air Pilotage School, Andover.
Armament and Gunnery School, Eastchurch.
Electrical and Wireless School, Winchester.
School of Photography, South Farnborough.
School of Balloon Training, Rolleston.
R.A.F. Staff College, Andover.
School of Army Cooperation, Salisbury.
School of Naval Cooperation and Aerial Navigation, Calshot.
R.A.F. Cadet College, Cranwell.
First School of Technical Training (Boys), Halton.
Second School of Technical Training (Men), Ramsgate.
R.A.F. School, Ambala, India.

It will be seen from the data given in this article that if our own air forces remain stationary, Great Britain's and Italy's authorized and contemplated air programs will within the next two years make the United States rank fourth instead of second among the world's air powers. If, furthermore, Japanese air power continues to expand, as may reasonably be expected on the strength of that country's current air force appropriations, then the United States will as likely as not find itself coming at the tail end of the world's great air powers.

### *Our Own Situation*

In view of the fact, which has often been stressed in these columns, that air power is the most effective and the most economical means of national defense, such a situation cannot be contemplated without grave misgivings. While it is not suggested that this country indulge in a competitive building program with France and Great Britain, it is essential for our national security that we have in peace time an air force sufficiently strong to equal those which possible enemy states could bring within striking distance of the continental United States as well as its non-contiguous possessions.

The geographical position of this country makes this, with one exception, chiefly a question of air power afloat. The exception is Alaska, which is only separated by a 50 mile stretch of water from the Asian mainland and which affords the easiest approach to the United States from the West. And Alaska, which would offer an invading air fleet a convenient stepping stone for raids against our Northwestern States, is absolutely unprotected by aircraft. We have not a single air squadron, military or naval, in Alaska today.

With this exception in mind, the problem of national air defense is to prevent the approach to the United States of a screened fleet of aircraft carriers which could transport aircraft within striking distance of the American coast. Such a fleet equipped with bombers and pursuit planes, once within striking distance of the American coast, could destroy New York and inflict incalculable damage upon the industrial and manufacturing heart of the United States within a few hours. In these circumstances, even the capital at Washington would not be safe.

The problem, as the joint Army and Navy Aeronautical Board sees it, is to meet such an attacking fleet either in the middle Atlantic or on the other side, and never permit it to reach American waters. Our ability to meet such an attack will accordingly depend on the number of aircraft we can carry to sea, which is a question of aircraft and aircraft carriers.

### *Plans of the Joint Board*

According to the New York *World*, the Joint Board is considering an aircraft building program which will meet these requirements of national defense. Its basic feature is to defend New York City and the industrial Atlantic seaboard against possible attack by aircraft. While the plan is not completed, it has gone far enough to determine it will be necessary at least to double the appropriations made for both Army and Navy Air Services last year, and will aim to provide for a continuing program such as resulted in the inauguration of the big battleship program. A total of approximately $50,000,000 or $60,000,000 will be asked from Congress for next year. The Army appropriation for Air Service last year was approximately $13,000,000 and that of the Navy $14,000,000.

The recommendations for increasing appropriations will take into consideration the necessity of enlarging the number of aircraft carriers attached to the American Navy. The only naval craft of this kind is the Langley, while two battle cruisers, the Saratoga and Lexington, are being transformed into carriers. This will give the American Navy a total of approximately 60,000 to 70,000 tons, as compared with the 135,000 allotted the United States under the naval treaty. French and Italian aircraft carrier equipment is negligible, but England already has 87,000 tons in commission and is bringing its equipment up to the total allowed by the Washington Conference agreement.

Japan has only one carrier of 9,500 tons in commission, but will have two carriers in commission at the end of the year, each of 26,000 tons, bringing the Japanese total approximately up to that of the United States.

But the aerial defense of the United States should not entirely rest upon aircraft carried to sea in ships, for the latter are highly vulnerable to torpedo and bombing attacks. This is particularly true of aircraft carriers. Not only do their unobstructed landing decks offer a splendid target for aerial bombing, but their structural strength is so much inferior to that of capital ships that aircraft bombs and torpedoes could do great execution among them.

Hence, behind the first line of defense represented by the air force afloat, we should maintain a second line of defense consisting of strong aircraft formations based on land. Today this second line of defense exists in theory only, for our entire offensive land air power consists of one Bombing Group at Langley Field, Va., one Pursuit Group near Detroit, and one Attack Group on the Mexican border. This makes a total of only twelve air squadrons, or 144 airplanes.

It is believed that when Congress reconvenes in December, it will realize the paramount importance of giving the United States the air force it requires for national defense, and that it will appropriate the sums necessary to make this country invulnerable from the air.

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## General Efficiency Curve for Propellers

N.A.C.A. Report No. 168

Report No. 168 of the National Advisory Committee for Aeronautics by Walter S. Diehl, is a study of propeller efficiency, based on the equation

$$\pi = \left(\frac{V}{\pi ND}\right) \cot (\varphi + \gamma)$$

where

$V$ = speed of advance.
$N$ = revolution per unit of time.
$D$ = diameter of the helix described by the particular element under consideration.

$$\varphi = \tan^{-1} \left(\frac{V}{\pi ND}\right)$$

and

$$\gamma = \tan^{-1} \left(\frac{D}{L}\right)$$

It is shown that this formula may be used to obtain a "general efficiency curve" in addition to the well-known maximum efficiency curve. These two curves, when modified somewhat by experimental data, enable performance calculations to be made without detailed knowledge of the propeller. The curves may also be used to estimate the improvement in efficiency due to reduction gearing, or to judge the performance of a new propeller design.

A copy of Report No. 168 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

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## Flying Model of Fokker T2

The Model Aero Engineering Co., of 1900 South 56th St., Philadelphia, has just brought out an excellent flying model of the famous U. S. Army transport monoplane T2 with which Lieutenants Kelly and Macready made their historic non-stop flight from New York to San Diego. Specifications of the model are: Span, with ailerons, 51⅞ in.; Chord (max.), 8⅞ in.; Length overall, 27 in.; Propeller diameter, 11 in.; Weight, 10 oz.

The model is constructed with solid ribs and Balsa control surfaces either set up ready to fly or knocked down. A guarantee is given by the company that if erected in accordance with detailed instructions and full size blueprint the model will fly 150 ft. or more.

It is the announced intention of the Model Aero Engineering Co. to construct true flying models of each type of plane as soon as it is introduced to the public.

# Results of the National Balloon Race

## Army Balloon Piloted by Lieut. J. W. Shoptaw, Probable Winner
## H. E. Honeywell Gains Second Place

The 14th National Balloon Race, conducted under the auspices of the Indianapolis Chamber of Commerce with the sanction of the National Aeronautic Association, which was started July 4 from the Indianapolis Motor Speedway, was apparently won by the Army balloon S6, Lieut. R. Olmstead, pilot, and Lieut. J. W. Shoptaw, aide, who landed at Marilla, N. Y., approximately 500 miles from the starting place. Second place will probably go to the balloon St. Louis, H. E. Honeywell, pilot, and P. J. McCullough, aide, who covered 450 miles, landing at Brockton, N. Y. The third place has not yet been determined as three entries covered an approximate distance of 400 miles each, all of whom landed in Pennsylvania.

Several contestants experienced trouble from leaky gas bags and other causes. Roy F. Donaldson had to make a forced landing near Bryan, Ohio, after he discovered that his rip panel did not function. The pilot and his aide jumped from the balloon, when it touched ground and were slightly injured, while the gas bag escaped with their entire outfit, clothing, instruments, and food.

Wade T. Van Orman and H. V. Thaden, in the City of Akron, were forced down by a leaky gas bag only 75 miles from the starting place, while Ralph Upson and C. G. Andrus, made a parachute landing near Wapakoneta, Ohio, after the fabric of their balloon, the Detroit, had accidentally ripped.

Warren Rasor, withdrew from the race owing to a leaky bag, but took off after the other balloons, and landed near Arcadia, Ind., 25 miles from Indianapolis.

### *Where the Contestants Landed*

Following are the preliminary results of the race, with the order of start of the contestants and their landing places:

1. *Army S6.* Lt. R. Olmstead, pilot; Lt. J. W. Shoptaw, aide. Landed Marilla, N. Y. 500 miles.
2. *City of Akron.* W. T. Van Orman, pilot; H. V. Thaden, aide. Landed 5 miles N. of Hartford City, Ind.; 75 miles.
3. *St. Louis.* H. E. Honeywell, pilot; P. J. McCullough, aide. Landed Brocton, N. Y.; 450 miles.
4. *American Legionnaire.* Capt. C. E. McCullough, pilot; Lt. C. R. Bond, aide. Landed Frankfort Springs, Pa.; 400 miles.
5. *Navy A6700.* Lt. L. J. Lawrence, pilot; Lt. F. W. Reichelderfer, aide. Landed Glenn Campbell, Pa.; 400 miles.
6. *Goodyear II.* J. A. Boettner, pilot; J. M. Yolton, aide. Landed Freemont, Ohio; 250 miles.
7. *Detroit.* Ralph Upson, pilot; C. G. Andrus, aide. Landed near Wapakoneta, Ohio, 2 a. m. July 5. 150 miles.
8. *Navy A6698.* Lt. L. J. Roth, pilot; Lt. T. B. Null, aide. Landed in Lake Erie. Balloon without basket or crew found floating 25 miles S.S.E. of Port Stanley, Ont.
9. *Navy A6074.* Lt. Comdr. J. P. Norfleet, pilot; Lt. J. B. Anderson, aide. Landed Mount Eaton, Ohio; 300 miles.
10. *City of Springfield.* Roy F. Donaldson, pilot; P. A. Erlach, aide. Landed 8 miles N.E. of Bryan, Ohio; 169 miles.
11. *Army S5.* Capt. L. T. Miller, pilot; Lt. C. M. Brown, aide. Landed Ford City, Pa.; 400 miles.
12. *Navy A6699.* Lt. F. B. Culbert, pilot; Lt. T. D. Quinn, aide. Landed Alliance, Ohio; 310 miles.
13. *Army S7.* Lt. J. B. Jordan, pilot; M. F. Moyer, aide. Landed Macedonia, Ohio; 150 miles.

The crew of the Navy entry A6698, Lieut. L. J. Roth, pilot, and Lieut. T. B. Null, aide, has not yet been accounted for at the time of going to press, and it is feared that they may have been lost in Lake Erie. The balloon, without the basket, was picked up floating by a tug 25 miles S.S.E. of Port Stanley, Ont., and towed to the latter place. In the netting of the bag there were the uniforms of the crew together with food, charts and the log book. As the supporting ropes of the basket were found cut, the assumption is that the areonauts cut loose from the gas bag on being forced down to Lake Erie. The appendix of the bag was also found slashed about six inches from the end, done with an apparent endeavor to let the gas out as the bag struck the water. Officers at the naval air station, Lakehurst, N. J., to which the two naval fliers were attached, hope that inasmuch as the baskets of the Navy balloons are almost unsinkable, the two men may yet turn up.

All of the balloons' baskets were equipped with life preservers about the basket, it is said. These preservers are lashed to the outside of the basket and would not have been cut off to lighten the balloon except in a very dire emergency over land, and certainly not by men who knew they were approaching water.

The baskets, of very light wicker construction, are lined with canvas, which under ordinary circumstances would hold out water. It was added that even if the basket leaked the preserver, filled with a material called "kapoc" instead of cork, would support the basket and its occupants. The canvas lining of the basket is provided with pockets. It was explained that the clothing found in the rigging of the wrecked envelope may have been placed there by the aviators before the approach of danger in an effort to cool off. It is customary when flying at low altitudes to lessen the closeness of the basket quarters by doffing the flying suits.

### *Search for the Navy Balloonists*

Two DH4's and a Loening Air Yacht of the Army Air Service, from Selfridge Field, and the flying boats Niña and Buckeye of the Aeromarine Airways together with numbers of motor boats and revenue cutters made a concerted search of Lake Erie as soon as the Navy balloon was picked up.

The Niña piloted by C. E. Schiller and carrying P. E. Easter, Cleveland manager of the company and C. Richards as observers took a northwest course sighting the Canadian shore about ten miles west of Point Alma, an hour after starting. Striking the shore in a zigzag course, about ten miles off shore, the crew scanned the shore and lake through powerful glasses to Port Stanley, Ont., approximately fifty miles, without a trace of the missing lieutenants or the balloon basket. The Niña landed at Port Stanley and a further examination of the balloon bag disclosed that several of the ropes that held the basket to the bag showed evidence of having been torn loose, only about half of the ropes showing clean cuts. Mr. Easter said some of the ropes showed evidence of having broken under terrific strain.

After a short stay the Niña left Port Stanley, flying in an easterly-southerly direction for a search of the American shore and the center of the lake. The American shore was sighted east of Conneaut, Ohio, and a zigzag course about ten miles off shore followed to Cleveland, about fifty miles, without a trace of the missing pilots or the basket.

Finally, on July 9, a fishing boat found the missing basket with the body of Lieutenant Roth strapped to it, but no trace of Lieutenant Null was found. It is believed that Lieutenant Roth died of exposure after being caught in the terrific storm which swept Lake Erie on July 5.

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## Wright T2 Engine Passes 50 hr. Test

The first Wright T2 production engine recently passed a most successful 50 hr. test, as required by Navy specifications E4C. This specification requires that at least ten of the fifty hours be run at the rated power of the engine, which is considerably more severe than the old test.

It is therefore gratifying to learn that the first production model of the T2 engine, which is intended for heavy duty seaplane work, ran through the fifty hours without requiring any repairs or adjustment whatever. The power at the end of the test was practically the same as at the beginning, and the fuel consumption averaged 0.482 lb. per horsepower hour for the entire run.

# Aviation and Modern City Planning

Aviation now enters extensively into the work of city planning as was evidenced in many of the exhibits displayed in the American Institute of Architects section of the Jubilee Exposition at the Grand Central Palace. Members of the Aeronautical Chamber of Commerce of America had on exhibition models of airships, airplanes and flying boats, landing field and night flying equipment and aerial photographs, maps, etc.

Provision must be made, in city planning for adequate airplane landing fields and airports for seaplanes. Also suitable equipment in the way of beacons and proper illumination for night flying. Through the courtesy of the Fairchild Aerial Camera Corp. several aerial views of Greater New York are on display and a model camera used in taking these photographs.

The following statement from the Department of Recreation of the Russell Sage Foundation shows many of the uses of aerial photography in city planning.

### *Uses of Aerial Photography*

"Aerial photography has enabled the city planner to see a city exactly as it is. Before the advent of this aid to the visualization of an entire city, the only way to obtain an idea of the topography of a place was by survey,—an expensive and sometimes a lengthy process. The city planner needs to know not only the streets, parks, railroads and other physical features as shown on a city map, but also how these actually look at the present moment; the extent of building in certain districts, the commercial development of waterfronts, the extent of wooded areas as possible park sites, etc.

"Before the city planner began to make use of aerial photography all this had to be obtained by actually visiting the territory. But now with the city and its suburbs laid out before him in a photograph he can see at a glance the actual division of the land into blocks, streets and open spaces. He can also see exactly what portions are built on and more or less the density of building.

"Aerial photography has enabled the city planner to see his entire territory as though he were looking down on it from an altitude of two or three thousand feet. This comprehensive and realistic survey of the streets, roads, parks and other open spaces, gives him a much more accurate idea of the section he is working on than he can obtain from studying maps of the same territory. For his elevations, which of course do not show to any great extent on an aerial photograph, he must still go to his contour maps.

"Many congested points both in building and traffic are sometimes discovered on the photograph, which otherwise would have meant a personal visit to the actual spots. A study of photography of a city sometimes shows the need of connecting boulevards between different parts of the city, or between various park areas, for the photograph will depict quite graphically a narrow street, for instance, which could be widened for a proper communication between parks or open spaces.

"Many times the aerial photograph of a city will show how the railroad lines draw industries around them in contrast to another section which is unbuilt and without railway facilities. Thus with the actual conditions of the plan before him, the planner can discover trends in housing and industry and develop an idea of improvement, even before he actually visits the ground."

### *Airway Equipment*

The American Gas Accumulator Co. of Elizabeth, N. J. had on display models of the equipment installed by the Post Office Department. Four field limitation beacons mark the limitations of the emergency landing fields. They are automatic in their operation and will burn for a period of six months without attention. They enable the aviator to accurately gage the dimensions of the landing field. These emergency landing fields are located every 20 to 25 miles along transcontinental airway between Chicago and Cheyenne. Aviation Routing Beacons are also in use by the Post Office Department on this route. These lights are visible in clear weather at a distance up to 10 or 12 miles, and are placed every three miles.

Another device developed by the American Gas Accumulator Co. is the Ground Wind Indicator, showing by day and night the direction of the wind. At night a powerful light illuminates its wings so as to form a lighted "T." The direction of the Ground Wind Indicator is visible when the aviator is three to five miles from the field.

An important adjunct for use in night-flying is the Sperry searchlight developed by the Sperry Gyroscope Co., for use by the Post Office Department. This light is of 5,000,000,000 candle power and is visible for about 35 miles in clear weather.

The Aeronautical Chamber of Commerce compiled and had on display a map of the United States showing the location of some 3000 landings fields and airports. Another map showed the transcontinental route of the Air Mail Service from New York to San Francisco.

The Aviation Committee of the Merchants Association of New York had on display a map showing the airport and landing field it is proposed to have established on Governors Island. This would provide facilities for both land and water planes. At present there is but one municipal airport in New York City which is located at 82nd Street and the North River. This terminal is only suitable for flying boats as no provisions are made for land machines. It is used as the New York Terminal of the Aeromarine Airways operating flying boats between New York City and adjacent coast resorts.

The New York-Newport Air Line, Inc., operating Loening Air Yachts on a regular commuting schedule between New York and Newport, maintains an airport at 31st Street and the East River.

Just as provision has been made in the past for rail and water terminal facilities, so must the up-to-date city in planning for its future development, provide for adequate and properly equipped terminals for aircraft, both land and water. The early establishment of landing fields will give impetus to the increased popularity and use of aircraft.

*—Aeronautical Chamber of Commerce*

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## Bibliography of Aeronautics, 1917-1919

This work covers the literature published from Jan. 1, 1917, to Dec. 31, 1919, and continues the work of the Smithsonian Institution issued as volume 55 of the Smithsonian Miscellaneous Collections, which covered the material published before June 30, 1909, and the work of the National Advisory Committee for Aeronautics, as published in the Bibliography of Aeronautics for the years 1909 to 1916. The interruption of international exchanges due to the War and the great difficulty encountered subsequent to the Armistice in collecting publications considered secret or confidential in character at the time of their issuance have accounted for the delay in the preparation of the Bibliography of Aeronautics for the years 1917, 1918 and 1919.

As in the Smithsonian volume, and in the Bibliography of Aeronautics for the years 1909 to 1916, citations of the publications of all nations have been included in the languages in which these publications originally appeared. The arrangement is in dictionary form with author and subject entry, and one alphabetical arrangement. Detail in the matter of subject reference has been omitted on account of the cost of presentation, but an attempt has been made to give sufficient cross references for research in special lines.

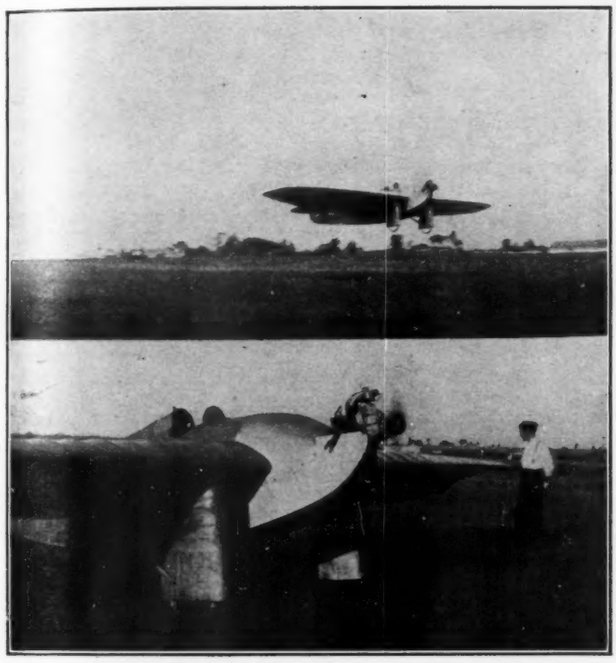
The National Advisory Committee for Aeronautics will next present a bibliography for the years 1920 and 1921 in one volume. The Bibliography of Aeronautics 1917-1919, contains 494 pages, and may be obtained direct from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 75 cents per copy.

## An Italian Light Plane

An Italian firm of aircraft manufacturers, the Pegna-Bonmartini Co. has built a light plane known as the "Rondine" (Swallow) which was successfully flight tested some time ago by Cav. Renato Donati, an Italian ace. The little ship was built to the designs of Signor Pegna, the designer of the four-engined P. R. B. flying boat, who has been studying the possibilities of economical airplanes for over a year.

The "Rondine" is, as may be seen from the accompanying illustrations a cantilever monoplane somewhat reminiscent of the Aachen glider which W. Klemperer flew at the second Rhoen meeting. The engine mounting, on the other hand, more closely resembles that of the English light plane "Wren". With the latter the "Rondine" has in common such features as easy control, low landing speed and high power loading, although its weight is somewhat greater, on account of the reduction gear of the engine and a stronger landing gear.

The question of a suitable engine delayed the trials of this machine for a considerable time. It was first intended to use an F. N. engine, but when bench tests showed it to be unsuitable for the purpose, an A. B. C. motorcycle engine



*The Pegna-Bonmartini light plane "Rondine" shown in flight and in a close up view on the ground*

was substituted. Fitted with latter, the "Rondine" flew at the first trial, being found very stable and sensitive to the controls. Although the machine can fly at an altitude of 100 meters with the engine throttled down to 3.8 hp. (3000 r.p.m.), for safe flying 5.8 hp. (3600 r.p.m.) is used. The minimum gliding angle is 1 in 14 and the power loading, at full power, 36 kg./hp. The maximum speed is estimated at 70 km.p.h. and the minimum speed at 40 km.p.h.

The specifications of the "Rondine" are as follows:

SPECIFICATIONS OF RONDINE LIGHT PLANE

Span, 10 m.
Chord, mean, 2 m.
Wing area, 20 sq. m.
Length, 6 m.
Height, 1.35 m.
Safety factor, 5.

Weight empty, 90 kg.
Weight of engine with reduction gear and propeller, 35 kg.
Wt. of fuel and oil, 15 kg.
Weight loaded, 205 kg.

## The Case of the "America"

The Curtiss Aeroplane & Motor Corp. has presented to a Royal Commission in England a broad claim for an award to it, based upon the fact that the British government, having purchased the original "America" at a time of great need in 1914, built or caused to be built a very large number of flying boats during the war, all based on the design and invention of the "America."

This claim has been denied upon the ground that the sale of the "America" without a specific reservation that the sale did not include the right to copy the design, constituted a "dedication to the Crown" of all ideas in the design not covered by valid patents. The Commission further stated that its decision was influenced by the fact that the Curtiss Aeroplane & Motor Corp. in America, built a large number of ships and motors for the British government and was paid for them.

The decision means that the Curtiss Company claims in England are patent claims, and should be prosecuted as such, in the courts, rather than broad claims of an equitable character to be settled by negotiation.

The Curtiss directors have not decided upon any further step to be taken in the matter, which is, in reality, only one phase of larger negotiations now being carried forward in Europe covering past, present and future use of Curtiss patents and inventions concerning planes and engines by European governments.

## Model Airplane Tournament

Col. Bion J. Arnold and Maj. R. W. Schroeder, formerly of U. S. Army Air Service, are prominently identified in promoting a tournament for model airplanes in Chicago, the tentative dates having been set for Aug. 17 and Aug. 18. The places possibly may be in Grant Park, Washington Park, or in the huge auditorium of the Municipal Pier.

Friday noon, June 15, at an executive committee meeting of the Air Board of Chicago, Colonel Arnold, who is president of the Board, pledged himself to have five hundred dollars in the bank available to the model airplane competition committee which is composed of Terence Vincent, R. W. Schroeder, W. L. Brock.

V. K. Brown, superintendent of playgrounds and sports for the South Park Commissioners, Chicago, has offered the cooperation of his entire department to help make the tournament successful. Walter Wright of the Chicago Bureau of Public Works, James P. Ward of the North Parks district, and Theodore Smergalski of the west Parks all have likewise offered to cooperate.

The events agreed upon include a fifty-yard straight flight, hand-launched duration flight, scale model competition (50 per cent for performance, 25 per cent each for workmanship and design), original model contest (30 per cent for design, 30 per cent performance, 30 per cent workmanship), and an open competition for models *not* powered with rubber.

## Airships Inc. Plant Busy

Work is being started at the plant of Airships Inc., Hammondsport, N. Y., on three TC airships, on a contract recently awarded by the Air Service.

The TC ship is the latest large sized training ship in use by the lighter than air branch of the Army Air Service. It has a capacity of 200,600 cu. ft., an overall length of 195.81 ft. and a maximum diameter of 44.54 ft. The ships carry a crew of six men, and have a cruising radius of 1630 miles at 47 m.p.h. and a maximum speed of 60 m.p.h. They are powered with two Wright Type I engines, mounted on outriggers just forward of midships of the car.

It is expected that all three of these ships will be delivered and in service within a year.

## New Airplane Propeller

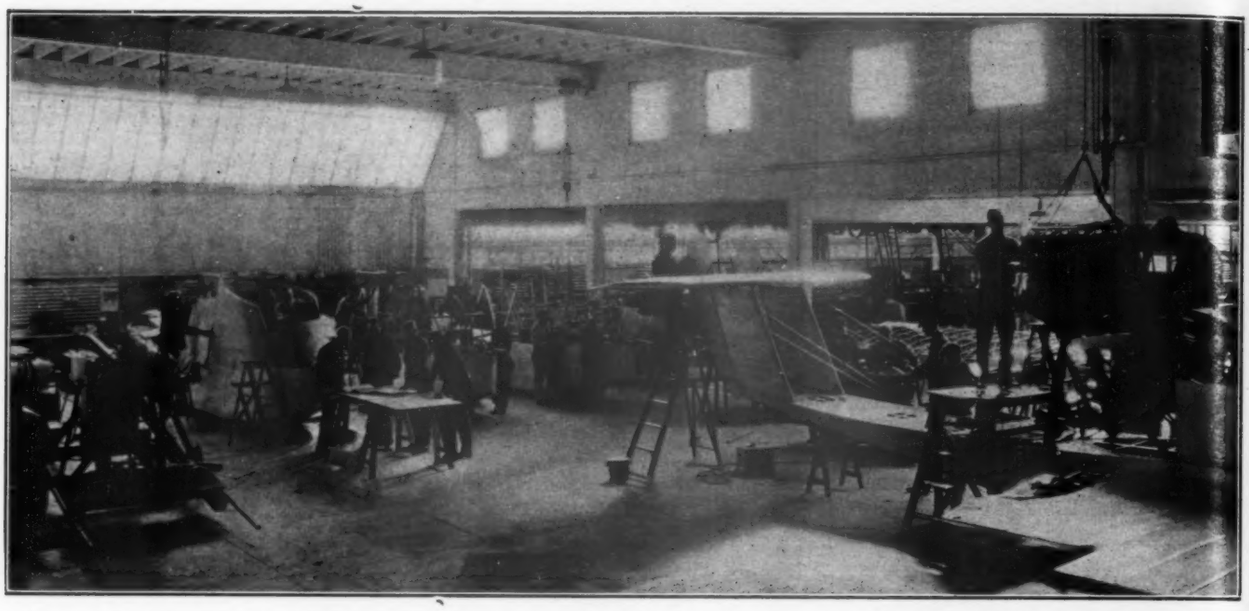
The Finnish government aircraft factory at Sandham, near Helsingfors, recently completed tests of a new type of propeller which was found generally satisfactory when tried at a speed of 185 km.p.h.

At present the factory is without special machinery for its manufacturing but will probably obtain it from abroad, Consul Leslie A. Davies, Helsingfors, Finland, reports.

## A Visit to the Loening Plant

Situated in the heart of Manhattan Island, almost midway between the two great railroad terminals of the Pennsylvania and New York Central, is the new plant of the Loening Aeronautical Engineering Corporation.

The factory, which is small as factories go, impresses the visitor with its up-to-dateness and with the way everything has been carefully planned out so that there is no lost space. The plant is housed in a specially constructed brick and steel building at the foot of East 31st Street. Special doors have been provided at the easterly end which, when opened, give a clear space of 46 ft. in width and 18 ft. high, easily permitting the Air Yachts, for which the company is rapidly building up a great reputation, to be brought out of the factory and launched in the East River one hundred feet distant.



*View of the interior of the plant of the Loening Aeronautical Engineering Corp. at 31st St. and East River, New York City. Several Loening Air Yachts are shown in different stages of assembly. Note engine hoist, on the right, leading from the overhaul shop to the main floor*

The main floor houses the wing shop, metal and woodworking departments and assembly hall. On the second floor, besides the offices and drafting room, is a complete motor overhaul shop, to which by means of trolleys and hoists, engines can be taken out or installed in planes without touching the main floor.

The accompanying illustration shows work on Loening Air Yachts which is the main work going on at present. The light in the factory, it will be noted, is especially good — skylights running along the whole southerly and westerly walls. Eight of these flying boats have been built for the Army Air Service, which will use them for rapid communication work between Army posts in the Island Possessions. Of the five Loening Air Yachts which will constitute the fleet of the New York-Newport Air Service, Inc. three have been completed, while the remaining two are being rushed towards completion.

## Our Growing Fuel Consumption

It is learned from the Department of the Interior that petroleum refineries of the country, in the tremendous effort to supply liquid fuel for the nation's millions of internal-combustion engines, produced gasoline at the rate of 20,634,756 gal. per day during the month of April, establishing a new high record rate of daily production in the industry. The nation's stock of gasoline May 1 amounted to 1,336,417,871 gal., attaining a new high record mark. This exceeds by 77,000,000 gal. the figures for April 1, which had previously constituted a record.

## Military Aviation in Mexico

The establishment of an independent air department is being considered by the Mexican Department of War and Marine. A bill to this effect which is to be introduced in the Mexican Congress next September, is being studied by the military authorities, and it is stated that President Obregon favors this measure.

At the present time the Mexican Air Force depends from the Department of War and Marine. Its main establishment is at Valbuena, near Mexico City, where fairly large workshops fitted with up to date machinery imported from the United States are maintained together with a flying school for Mexican Army officers. The flying equipment consists of a great variety of machines, most of which are of French, British and German manufacture, although some are Mexican built ships. The principal engines used are the Salmson, the Lorraine-Dietrich and the Hispano-Suiza. Active service formations include an observation squadron of Salmson planes and a bombing squadron of twin engined Farman F50 planes. A pursuit squadron is shortly to be organized with a new type of cantilever monoplane of Mexican manufacture, which is fitted with a French rotary engine. Recent trials of this ship appear to have been successful.

The Mexican air authorities are endeavoring to develop purely Mexican type of military airplanes in order to be independent of foreign sources of supply.

## Book Reviews

ETUDES ELEMENTAIRES DE METEOROLOGIE PRATIQUE. By Albert Badit. 340 pp. 118 ill. (Gauthiers-Villars & Cie., Paris.)

This is the second edition of a textbook on meteorology which is very popular in France. The new edition contains certain additions, concerning aerological soundings by artillery fire, air turbulence, the decrease of temperature in stormy weather, and a new chapter concerning the noeturna radiation of the atmosphere.

WING TIP RESEARCH. Bulletin No. 3, University of Toronto. By J. H. Parkin, H. C. Crane and J. E. S. Mac Allister. (University of Toronto Press, Toronto, Canada.)

This is a report on experiments conducted with a view to ascertaining the influence of differently shaped tips upon aerofoils. The results are in general agreement with the conclusions of Eiffel from the tests of Foucault wings.

# AIRPORTS AND AIRWAYS

*This Department is concerned with all civil flying activities such as the establishment of airports, the marking of airways, warnings to airmen regarding obstructions, experiences gathered on flying routes and landing fields, the work of commercial aviation companies and private fliers, the formation of new air transport enterprises, personal paragraphs of general interest, etc.*

*Communications to this effect, addressed "Airways Editor, Aviation, 225 Fourth Ave., New York City", should be brief, accurate and to the point. They should deal with facts, not with theories or speculations. While American civil flying activities will naturally be given prominence, communications will also be welcomed from Canada, Mexico and other parts of the Western Hemisphere.* EDITOR.

## Chicago Notes

Ralph C. Diggins, formerly head of the Ralph C. Diggins Co. prior to its consolidation with the James Levy Aircraft Co. of Chicago, is now Vice President of the Chicago Air Park Co., and is in active charge of the latter's home study course.

The flying field and office of the Chicago Air Park Co. is located at 63rd Street and 48th Avenue, Chicago, where it occupies a municipal airdrome on a street car line to the city. They have completed the erection of three 12 to 16 ft. runways, a three ship hangar, a shop building and separate school building and office.

The company is conducting a general aviation business which includes flying instruction, passenger carrying, special cross country service, aerial photography and mapping. The field comprises 80 acres with several hundred acres of open land for approaches. The company is operating five ships and expects to increase this fleet in the near future.

The Aviation Club of Chicago recently held two meetings to bring about a uniformity of rates for passenger carrying by airplanes. Some fliers are asking $5 for a short "hop," while others still stick to the old $10 rate.

The fliers who have reduced their rates claim that they are getting more trade, thus making up the loss and at the same time making aviation more popular. Those still asking $10 claim they have to do it because they lose too much time in taking off and landing, and in making so many extra trips increase the risk of breakage and wear.

At the next meeting of the Aviation Club of Chicago, which will be held the latter part of July, the question will be raised as to whether Henry Ford, if elected president, will make the United States first in the air.

Captain Sheperdson, who was on a skywriting tour of the neighboring states, has returned to Ashburn Field from Dayton to resume skywriting activities in Chicago. The Skywriting Corp. of America has added a new ship to its equipment, which now consists of ten planes.

## South Atlantic Airship Line

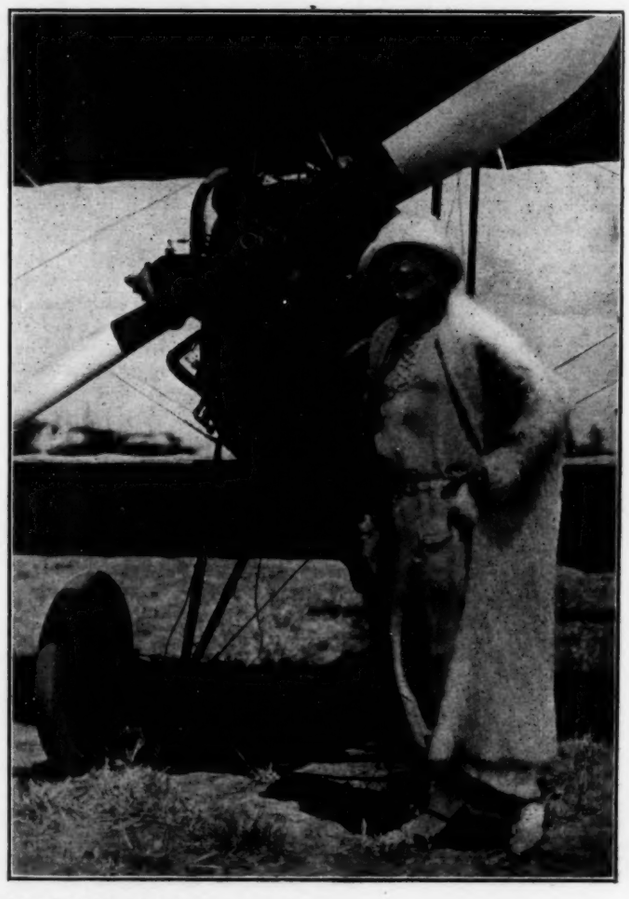
The Zeppelin commercial airship line which Spanish and South American capitalists propose to organize with German engineering and operating personnel is rapidly nearing realization. The financial program of the company which has recently been made public in Madrid, provides for the following expenditures: 14½ million pesetas for the airport at Seville, Spain; 24½ millions for the airship port at Buenos Aires, including all installations; 11 millions for the airship factory to be built in Spain; 4½ millions for the airship pilots school to be created in Spain; and 21 millions for a revolving shed which is to be built in Buenos Aires. The total expenditure contemplated is 75 million pesetas, or approximately $15,000,000.

## "Jewell Bill" Defeated

The so-called "Jewell bill," introduced by State Senator John F. Denvir in the Illinois Legislature, providing drastic regulations for pilots operating commercial aircraft, has been withdrawn after urgent requests from all Chicago fliers.

The provisions of the bill, which among other drastic measures would compel every flier to furnish a bond of $50,000 against any damage to life or property, were taken up by a large number of fliers and aviation enthusiasts at a special meeting of the Aviation Club of Chicago. A strong resolution was drawn up, requesting Senator Denvir to withdraw the bill, a copy of the resolution being sent to every member of the legislature. The bill was defeated in the Senate June 27.

Among the reasons given in the resolution were the following: Regulation and control of aircraft is practically a federal function. The government is already considering the control of aircraft. The development of aviation is of extreme importance and directly concerns our national defense. Regulatory measures as proposed in Senator Denvir's bill are harmful and threaten to extinguish the growth of civilian aviation.



(c) Kadel & Herbert

*Miss Andree Peyre, who recently made an unofficial woman's altitude record of 15,700 ft.*

## New England Airways

The movement to establish a network of airways throughout New England has gained further impetus with the appointment of six leaders in the promotion of commercial and military aviation to serve on the Boston Chamber of Commerce committee which is developing the New England airways project. All six are prominent in the business life of Boston. Three of them served as pilots of American airplanes during the World War.

As announced by the directors of the Chamber, the appointees are: Col. E. S. Gorrell of the Marmon Boston Co., chairman; Porter H. Adams, engineer; George Bramwell Baker of Baker, Young & Co.; W. Irving Bullard, vice president of the Merchants National Bank of Boston; Emery Haseltine of Kimball, Russell Co.; and James T. Williams, Jr., editor of the Boston *Transcript*. They have all rendered previous service to the Chamber in the promotion of aviation and other activities.

Colonel Gorrell, a West Pointer and a graduate of Massachusetts Institute of Technology, with eight years' service in the Army, became an aviator in 1914, when he was detached from the Infantry to the Aviation Section, S. C. He was one of the aviators who went into Mexico on Pershing's punitive expedition in 1916. During the World War he served as chief of staff for the air service in the A. E. F., and won the American Distinguished Service Medal, the British D.S.O. and the cross of the Legion of Honor. He has the degree of Master of Science in Aeronautical Engineering, and is industrial engineer of the Nordyke Marmon Co. and President of the Marmon Boston Co.

Porter H. Adams of the committee was also a flier before the war. During the war he was an ensign in the Naval Aviation and had charge of the Naval Intelligence office at Chatham, where he was also aide to the commandant. He is a graduate of Massachusetts Institute of Technology. He is vice president, from the New England district, of the National Aeronautical Association, and a member of the contest committee of that organization.

The third aviator on the committee is Emery Haseltine, who was in the Naval Aviation during the war. He is now in the bond investment business. For several years he has been one of the most active members of the Chamber.

George Bramwell Baker and W. Irving Bullard, although not pilots, have done considerable flying as passengers, and are both interested in aviation from the business point of view.

The other member of the committee, James T. Williams, Jr., is editor of the Boston *Transcript*. He also has done a great deal of flying as a passenger and has long been an enthusiastic supporter of plans for the development of aviation. He was one of the leaders in the campaign for the establishment of the Boston airport.

When fully developed, New England airways will connect Boston with the other business and industrial sections of New England and also with the summer resorts. Airways which have been tentatively planned are the following: Boston to Albany, N. Y.; Boston to Bangor, Me.; Boston to Dixville Notch, N. H.; Boston to Springfield, Vt. to Burlington, Vt.; and Boston to New York.

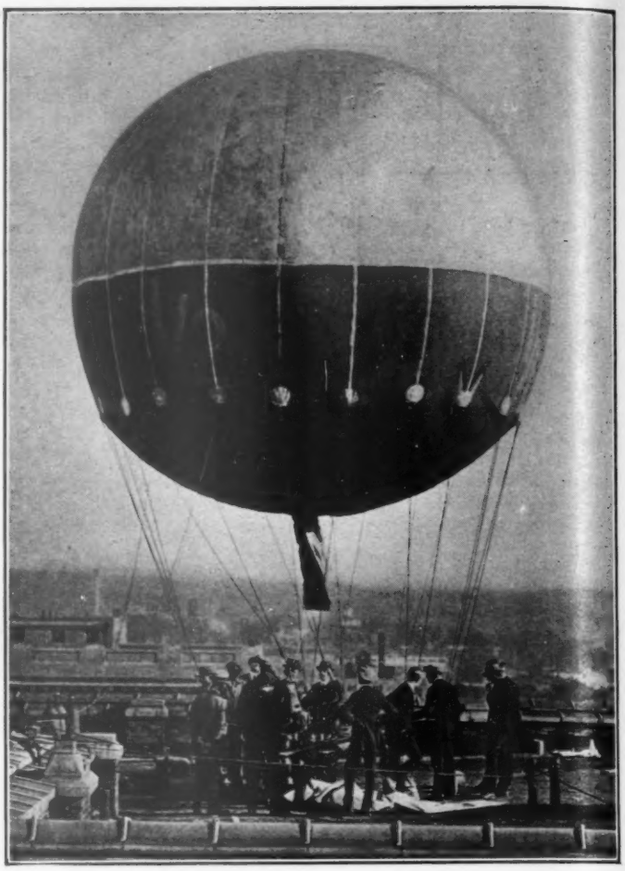
## Rosecrans Field, St. Joseph, Mo.

Rosecrans Field, the new municipal airport of St. Joseph, Mo. is marked with International marker composing Nos. 9-5, with inverted U between numbers, above which, appears the word "St. Joseph." It has a landing circle 100 ft. in diameter, showing safest landing spot located in the center of the field. The field is fully equipped in all necessary respects; can be approached from any direction and would take care of planes with landing speed of 100 m.p.h.

In connection with the Pony Express Celebration which will be held in the latter part of August, the Chamber of Commerce of St. Joseph is planning to have government planes race from St. Joseph to coast cities and so demonstrate the high speed of modern transportation as well as the importance of the Air Service to national defense.

As will be recalled, Brig. General Mitchell, Assistant Chief of Air Service, stated sometime ago that an air fleet mobilized in the center of the United States could effectively defend any point on the great coast line of the country by its ability to reach any given point within 11 hr. General Mitchell based his statement on the recent exploit of Lieutenant Croker —a 1400 mile non-stop flight—in which the distance was covered in less than 12 hr.

St. Joseph being practically in the center of a 1400 mile radius, it would embrace every seaport in the country, and have the advantage of the longest distance being to the West and the Northwest on account of a difference in time. This position would also give the benefit of longer daylight which could be flown with our present ships, affording a wonderful demonstration to the public of the practicability of such a defense.



*A "jumping balloon" of 5000 cu. ft., the Kiwanis, before its start from a Detroit office building. Note the interesting circumferential band and patch rigging*

## Manchester-London Air Service

It is rumored that the air service between Manchester and London is to be discontinued, owing to the traffic being too inadequate to make it a paying venture. One of the reasons given for this lack of support from the traveling public is that the air stations lie outside the cities—in the case of London nearly 20 miles from the business center—whereas the railway stations are convenient to the business districts. Although the flight between Manchester and London takes about 2 hrs., while the best train makes the distance in 3½ to 4 hrs., the saving in time is negligible when allowance is made for the time required to get to and from the air stations.

## France to Tunisia Air Service

The Antibes-Ajaccio-Cagliari-Bizerta-Tunis air service, connecting France and Tunisia via Corsica and Sardinia, is to be opened in July, according to the vice president of the French Aeronautical League. An air line joining Cannes and Tunis is also planned.

# U. S. ARMY AND NAVY AIR FORCES

## U. S. ARMY AIR SERVICE

### New Endurance Attempt

Capt. Lowell H. Smith, A. S. and First Lieut. J. B. Richter, A. S. on June 28 attempted to establish a new world's duration record by remaining aloft four days and four nights. For this purpose they intend to have their DH4 refueled in flight, as they had experimentally done the previous week, from another ship piloted by Lieutenant Hines and carrying Lieutenant Sieffert as observer. It was proposed to deliver to Captain Smith fuel in 50 gal. lots, but of several attempts to make contact between the two ships only one was successful, when only 15 gal. of gasoline could be delivered on account of trouble with the feed line. Even so, Captain Smith and Lieutenant Richter remained up 24 hr. 6 min. being eventually forced down by a heavy fog and lack of fuel.

When the aviators ran into the fog they changed their course, which had been fifty kilometres long on a certified speedway, to an inside air line of short distance. They evidently thought that by doing this they would be able to see their way and still continue the flight. In attempting to land they were forced down into shallow waters of San Diego bay at 4.40 a. m. on June 29, where the plane nosed over without however, injuring its occupants.

The two daring airmen had coursed throughout a moonlit night. It was their second unsuccessful attempt within two days to remain in the air long enough to break all endurance records. Wednesday they made their first start, but the burning out of a generator forced them down in less than six hours.

Capt. Smith and Lieut Richter broke at least one record, that for speed over 2,500 kilometres, and are believed to have broken that for speed over 3,000 kilometres.

### Pathfinders for World Flight

First Lieuts. Clifford Nutt and Clarence E. Crumrine, A.S., have been selected to proceed on a "path-finding trip" for the purpose of gathering data in connection with a proposed flight around the world. Both of these officers are experienced cross-country pilots and both were members of the flying expedition from New York to Nome, Alaska, and return, in the year 1920, headed by Capt. St. Clair Streett.

The itinerary of Lieutenant Crumrine, who is now stationed at the Air Service Enginering Division at Mc Cook Field, is as follows: From the United States to the British Isles, thence to Greenland, thence to the British Isles, thence to Iceland, thence to the British Isles, thence to the Faroe Islands and return to the British Isles, thence to France, Italy and return, through France and the British Isles to Canada, thence to the United States.

Lieutenant Nutt, who is now serving a tour of duty in the Philippine Islands will proceed from there to Japan, thence to the Kurile Islands, to the Aleutian Islands, to Alaska, returning over the same route.

These two officers will gather data for a report on landing facilities, weather conditions, and other pertinent data in the various countries visited. It is believed that the path-finding trip will not be completed until the end of the summer after which consideration will be given to definite plans for the proposed flight around the world.

### Memorial to Lost Airman

General Orders of the War Department, recently issued, announced that the United States Army Airdrome at Fort Riley, Kan., was designated "Marshall Field" in honor of Col. Francis C. Marshall, Cavalry, who lost his life in December, 1922, while in flight between San Diego, Calif., and Nogales, Ariz.

Colonel Marshall was a passenger in a plane piloted by Lieut. C. L. Webber, A.S. They left Rockwell Field on Dec. 7 last, and for a stretch of nearly six months had not been heard from. All efforts to locate the lost fliers proved fruitless, and Army officials had reluctantly classified the incident as an unsolved mystery, when word was received at Rockwell Field on May 12, that the plane had been found by a cattle-man in search of some stray cattle in the Cuyamaca Mountains. Major Arnold immediately dispatched a detachment of officers, consisting of Captain Ervin, Lieutenants Smith, Adler, Seifert, Richter and Hine, to that point. They returned Sunday afternoon with the remains of Colonel Marshall and Lieutenant Webber, which were turned over to a local undertaking establishment.

On May 16, the entire force at Rockwell escorted the bodies from the funeral parlors to the Sante Fe depot, where they were placed on the 7:30 train to be taken to their last resting place. Lt. J. P. Richter, A.S. who was Lieutenant Webber's room-mate and most intimate friend, and who, it will be remembered, stuck to the very last during the search in December and January, following every clue which was given, accompanied his body to Denver. The remains of Colonel Marshall were transferred to another train in Los Angeles, and in compliance with the request of Mrs. Marshall were met in Kansas by the Colonel's former aide de camp during the war, who escorted the remains to Washington, D. C. where interment was made in Arlington Cemetery.

On Sunday, May 20, about 100 employes of the Rockwell Air Intermediate Depot, equipped with picks, shovels, cement and sand, drove to the mountains, and leaving the road at a point five miles from Cuyamaca Lake, climbed to the spot where the wrecked plane lay and buried the engine in a solid concrete grave, placing a bronze tablet on top to mark the spot where one of the most loved officers of the Air Service made his last landing. The tablet was cast at the Rockwell Air Intermediate Depot and bears the following inscription:

IN MEMORY
of
Col. F. C. Marshall, Cav.
and
Lieut. C. L. Webber, A.S.
who fell at this spot
Dec. 7, 1922.

All material for the marker had to be carried up the rough mountainside, 1¾ miles and too much credit cannot be given to the civilian employes at the Depot for the earnest, active part they took in marking this spot in such a way that even time cannot destroy it. A copper tube was placed in the concrete base, containing a copy of the San Diego *Union* of Dec. 8, 1922, which gave the first news of the lost airplane; also a copy of the San Diego *Union* of May 13, giving the first account of the finding of the lost plane, a Masonic Calender for 1923, and a list of the Officers and Warrant Officers on duty at Rockwell Field; also a list of all the employes of this Depot.

### New Training Planes

Three new Army Air Service training planes of the TW3 type, in which the novice and the instructor sit side by side, having proven satisfactory after tests at Mc Cook Field, an order for twenty more has been placed with the Consolidated Aircraft Corp. The new ships will be ready by December, it is expected, and will be shipped to Brooks Field, Tex. for training student aviators. Instruction in these new ships, designed by the Dayton-Wright Co., with side-by-side seats and one instrument board, it is believed will facilitate flying instruction through better communication between instructor and pupil who were behind each other in the older training planes.

## Army Orders

Order assigning Capt. Victor Parks, jr. A.S. from Ft. Benning to Maxwell Field is revoked.

Maj. John B. Brooks, A.S. relieved from duty at Hd. 3rd Corps Area, Baltimore; assigned to Tactical School, Langley Field, as student.

First Lieut. Robert E. Selff, A.S. relieved from duty at Crissy Field; assigned to duty in Philippine Dept. To sail about Sept. 23, 1923.

First Lieut. Clarence P. Talbot, A.S. relieved as assistant professor at University of Illinois, Urbana, Ill.; assigned to duty in Hawaiian Dept. To sail for Honolulu about Sept. 25, 1923.

Capt. Donald P. Muse, A.S. relieved from duty with Org. Res. 5th Corps Area; assigned to duty with Hawaiian Dept. To sail about Aug. 28, 1923.

The following Air Service officers are transferred from the continental United States to the Hawaiian Dept.: Capt. Hugh M. Elmendorff; First Lieuts. Joseph P. Stromme, Merrill D. Mann, Henry E. Woodridge, William K. Moran, Louie C. Mallory, Claire L. Chenault, Harold L. Clark, Albert F. Hegenberger, Carl W. Pyle, Charles M. Cummings, Guy L. McNeill, Paul C. Wilkins, Oscar Monthan, Henry W. Kunkel; Sec. Lieuts. Fred C. Fishback, Carlyle W. Graybeal.

Resignation of Capt. Alfonzo Gibson, A.S. was accepted by the President.

Transferred to Air Service for appointment as Flying Cadet: to Scott Field Pvte. 1st Cl. Otto Wienecke, S. C. Ross Field, Calif.; to Brooks Field Corp. Willis H. Kennedy, 9th Inf., Ft. Sam Houston, Tex. and Pvte. John J. Roselle. Corp. Harvey N. Martin, A. S. Langley Field; to Scott Field for appointment as Flying Cadet.

Leave of absence of one month granted to Maj. John D. Reardan, A. S.

Maj. John C. Mc Donnell, A. S. relieved as assistant professor of military science and tactics, M. I. T. Cambridge, Mass.; assigned to duty in Philippine Dept.; to sail for Manila about Sept. 22, 1923, from San Francisco.

Maj. George L. Lowell, Jr., A. S. relieved from duty at Bolling Field, D. C. upon arrival of Maj. William H. Garrison, A. S.; assigned to duty in Hawaiian Dept.; to sail for Honolulu about Aug. 4, 1923, from San Francisco.

Howard Miller Fey, appointed as second lieutenant, Air Service from civil life, assigned to duty at Brooks Field, Tex.

First Lieut. John B. Patrick, A. S. relieved as assistant professor in military science and tactics, University of California, and temporary duty at Crissy Field; assigned to duty at Ft. Bragg, N. C. with A. S. troops.

Capt. George S. Warren, A. S. relieved from duty at Langley Field, Va.; assigned to Scott Field after completion of summer training duties at Ft. Bragg, N. C.

Tech. Sergt. Lee E. Brown, A. S. from Panama Canal Dept. to Kelly Field, Tex.

Tech. Sergt. Robert Hornby, 68th Serv. Sqn. A. S., Kelly Field, Tex.; to Panama Canal Dept.

Following enlisted men sent to Brooks Field, Tex. for appointment as flying cadets: Corp. Michael Arendas and Pvte. Roy A. Nicol, Bolling Field; Corp. Loren W. Darst, Chanute Field; Pvtes. Dewey A. Burch and Ivan L. Wolff, Crissy Field; Sergt. Harold D. Johnson, Langley Field; Pvtes. Alexander E. Cabana and Ted Mosely, Mitchel Field.

Sec. Lieut. Francis Borgia Kane, A. S. is transferred to Coast Artillery Corps and relieved from duty at Brooks Field, Tex.

Leave of absence of one month and fifteen days is granted First Lieut. Evers Abbey, A. S.

Maj. John A. Paegelow, A. S., Scott Field, Ill.; designated act. commandant of Balloon and Airship School during temp. absence of Col. Chalmers G. Hall, A. S.

Leave of absence of two months is granted First Lieut. Fred S. Borum, A. S.

Capt. Warner B. Gates, A. S. relieved from duty as student at A. S. Tactical School; to Scott Field.

First Lieut. George F. Parris, A. S., Walter Reed Hospital, ordered to report to army retiring board.

Placed upon retired list: 1st Sergt. John J. Devine, 96th Bomb. Sqn. Langley Field; Staff Sergt. Edwin R. Taylor, 18 Airsh. Co., Aberdeen.

# U. S. NAVAL AVIATION

## Orders to Officers

Lt. (jg) Dixwell Ketcham, U.S.N.— Detached Aircraft Squadrons, Scouting Fleet; to conn. f.o. U.S.S. Richmond and on board when commissioned.

Ens. James E. Hamilton, U.S.N. — Detached Naval Air Station, Hampton Roads; to Naval Air Station, Pensacola, Fla.

Ens. Herbert V. Perron, U.S.N. — Detached Aircraft Squadrons Battle Fleet to Battle Fleet.

Lieut. Andrew T. Lamore, U.S.N. — Detached R. Barracks Hampton Roads, Va.: to U.S.S. Langley.

Ch. Mach. Ernest J. Leonard, U.S.N. — Detached U.S.S. Wright; to U.S.S. Rochester.

Lt. Comdr. Harold R. Keller, U.S.N. — Detached U.S.S. Langley; to conn. f.o. U.S.S. Raleigh and on board as engineer officer when commissioned.

Lt. (jg) William Sintnon, U.S.N. — Detached U.S.S. Bainbridge; to Naval Air Station, Pensacola, Fla.

Lt. (jg) Jesse G. Johnson, U.S.N. — Detached U.S.S. Humphreys; to U.S.S. Langley.

## Captain Christy Solos at Pensacola

Before being detached from the Naval Air Station at Pensacola, Capt. H. H. Christy, who for nearly four years has been Commandant of the Station, signalized his departure by taking a solo flight in one of the N9 seaplanes. Although his duties in Naval Aviation have been in an administrative capacity, Captain Christy has always felt the lure of the air and has chalked up a heavy score of flying hours to his credit. In the time that he has spent in the air he has received instruction in the actual control of a plane incident to his duties at the Naval Air Station, and his solo flight a week ago was a fitting climax to his tour of duty at Pensacola.

Captain Christy will command the U.S.S. California, flagship of the Battle Fleet.

## Navy and Marine Fliers at Media, Pa.

Two planes from the Naval Air Station, Anacostia, D. C. and two planes from the Marine Flying Field, Quantico, Va. flew to Media, Pa., for demonstration and exhibition during the aerial show given under the auspices of the Media Chamber of Commerce on Saturday, June 30. The planes returned the following day.

The Anacostia planes were an MO1 piloted by Lieut. G. R. Pond, U.S.N.R.F., and a VE9 piloted by Sec. Lieut. L. R. Sanderson, U.S.M.C. Quantico furnished a Martin Bomber piloted by First Lieut. Walter F. Hallenberg, U.S.M.C., and a VE9 piloted by First Lieut. William T. Evans, U. S. M. C.

## Aerial Circus at Pensacola

A flying circus was held over Pensacola during the Florida American Legion Convention at that city on June 16. Six five plane formations took part, followed by aerial acrobatics. Various types of Naval planes were represented in the demonstration.

Captain A. W. Johnson recently made a three day inspection trip to the Naval Air Station, Lakehurst, N. J. and the Naval Aircraft Factory, Philadelphia, Pa. Captain Johnson was very much impressed by the varied activities at the Aircraft Factory and the amount of work being turned out.

## Naval Air Station San Diego

The Naval Air Station at San Diego had a Navy booth on exhibition during the Elk's Circus at Balboa Park, San Diego during the last two weeks in June. The exhibit included a very interesting Naval Aviation display, with aerial gunnery equipment, aerial bombs airplane cameras and photographs, together with a complete driving gear and field ordnance.

## Aerial Navigation Course

A more advanced course in aerial navagation has been instituted as part of the course of instruction for naval aviators at Pensacola. The new features of the course involve cruises by seaplane out of sight of land over the Gulf of Mexico, and the fixing of the plane's position by sextant observation of the sun.

## Miscellaneous Notes

Commander A. C. Read is visiting the Department to get all available information on latest developments and plans, and is revamping the War College rules pertaining to aviation.

On Thursday, June 14, regular mail trips with the DT4 seaplane were commenced to Hampton Roads. Since commencing the runs, the plane has made a round trip every day, and the T2 engine installed in this plane has stood up very well. The water and oil cooling systems presented a little difficulty, but tests have brought out the faults, and it is proposed to make subsequent trips under as adverse conditions as possible in order to give the T2 engine a thorough trial. The engine in this plane has had forty five hours since the last overhaul, and 195 hr. 19 min. total time.

Lt. Comdr. P. N. L. Bellinger called at the Bureau of Aeronautics, on Thursday, June 14. He is now on leave, but will be on duty with the Aircraft Squadrons Scouting Fleet during the summer.

The aviation detail for the light cruiser, Richmond, consisting of Lt. H. B. Sallada and Lt. D. Ketcham and seven men, is now in training at Philadelphia and will report on board the Richmond when that vessel is placed in commission. It is expected that Lieut. W. M. Fellers, who designed the present type of catapult will be sent to temporary duty on Board the Richmond during the foreign cruise of that vessel this summer.

Lt. Comdr. E. M. Pace has reported for duty in the Bureau of Aeronautics, and is relieving Lt. C. N. Liquid in the Maintenance Section. Lieutenant Liquid will leave soon to attend the Massachusetts Institute of Technology.

During the past week the first DT2 plane manufactured by the L.W.F. Co. successfully underwent trials as a seaplane, the land plane trials are still underway.

Lt. Comdr. M. A. Mitcher and Lt. David Rittenhouse on June 13 tested out the first UO1 at the Naval Aircraft Factory in Philadelphia and pronounced the ship an excellent flying machine.

Lt. B. G. Leighton is in the hospital, having been operated on for appendicitis.

Part of the Air Force, Pacific Fleet has been authorized to operate in Puget Sound, and another part in Honolulu, subject to available transportation.

Capt. G. W. Steele, U. S. N. has been designated by the Secretary of the Navy to command the Airship ZR3, which is being built in Germany. Captain Steele will report to Lakehurst shortly, it is understood, to study the ZR1 before sailing for Germany.

Capt. H. C. Mustin, executive officer of the Bureau of Aeronautics is reported to be confined at his home by a severe illness. In his absence his duties are being taken over by Capt. A. W. Johnson, of the Bureau.

## New Training Plane to be Selected

The need for a training plane for Naval aviators that would be suitable for instruction in different phases of Naval Aviation has led the Bureau of Aeronautics to take steps to select a new plane, from various modern types being submitted. This plane will be a successor to the Curtiss N9, the Navy standard training plane for the past seven years.

All of the planes under consideration are adaptable, by changing landing gear, to either sea or land flying, and are suitable for use in connection with gunnery instruction, both machine gunnery and bombing. The planes will be assembled at the Naval Air Station, Pensacola, Fla., where they will undergo extensive trials. The following planes will be tested.

Boeing Training plane.
Glenn Martin Training plane.
Huff Daland "HN1" Training plane.
Dayton Wright "Chummy" Training plane.
Vought modified "OU1" Training plane
Two new types developed by the Naval Aircraft Factory.

## Helium for the ZR1

Enough helium has been received at the Naval Air Station at Lakehurst, N. J. to inflate the fleet airship ZR1 the assembly of which is now nearly complete at that station. The capacity of the ZR1 is 2,115,000 cu. ft.

## Rudderless, Lands Safely

One of the most daring and spectacular landings in the history of flying was performed last week at Hampton Roads naval air station, by Hubert B. Griggs, naval aviation pilot, when with rare skill he glided 1200 ft. to the water after losing the rudder of his machine in mid-air.

The squadron of which Griggs is a member was out over Hampton Roads. While flying formation at a height of 1200 ft. the aviator just behind Griggs saw the latter's rudder fly off. This left Griggs without means of steering the machine.

No one who saw can clearly describe it, but somehow Griggs side slipped and glided all the way down for 1200 ft, missing fishstakes, vessels, docks and houses and landed in clear water in the harbor unhurt, a matter of about five minutes after the accident happened. He then taxied his plane to the hangars at the Naval Air Station several miles away, without his main control and with the next best one jammed.

The plane in question was Douglas torpedo plane No. 6085 (1-T-1) which holds the weight carrying record of 11,300 ft., made at Dayton, April 17, 1923.

## Naval Air Squadrons in New York

A naval aviation force consisting of twenty-four planes, three aircraft tenders and approximately 600 men, under command of Capt. W. R. Gherardi, U.S.N., reached New York July 3 from the naval air station at Hampton Roads, Va. The aviation force is en route for Newport, R. I., whither it has been ordered for summer training. The two plane divisions are commanded by Lt. Comdrs. H. T. Bartlett and J. Comfort, and carry approximately 140 men, while the three tenders — Wright, Teal and Sandpiper — carry the remaining 460. This force is to return to Hampton Roads in September.

On July 4 four planes of these divisions participated in the exercises of Independence Day, and accompanied the S. S. Leviathan out to sea a certain distance.

The planes with their tenders are anchored in the North River near 158th Street.

## Photographic Map for Marine Maneuvers

In preparation for the Marine maneuvers this summer, 400 miles of road in the vicinity of Washington are being mapped by a photographic plane, thus providing means of minute study of the area of operations. In this connection the tri-lens mapping camera recently acquired by the Navy is getting a thorough test. Operations are being conducted from the Naval Air Station, Anacostia, D. C.

## Speed Courses at San Diego

A 25 kilometer and a 3 kilometer speed course have been laid out at the Naval Air Station, San Diego, Calif., and will be used in establishing flight records.

## COMING AERONAUTICAL EVENTS

DOMESTIC

Oct. 1-3 — National Airplane Races, St. Louis, Mo.
Late Fall — Curtiss Marine Flying Trophy Race

FOREIGN

July 20-Aug. 12 — International Aero Exhibition, Gothenburg, Sweden
Aug. 3-31 — Sailplane Meet, Rhoen, Germany
Aug. 5-26 — Sailplane Meet, Vauville, near Cherbourg, France
Sept. 23 — Gordon Bennett Balloon Race, Brussels, Belgium
Sept. 28 — Schneider Maritime Aviation Trophy Race, Cowes, Isle of Wight, England
Dec. 1 — Entries close for French Engine competition

### Orders to Officers

Lt. Armin T. Fellows (DC) U.S.N.—Detached Naval Station, Guantanamo Bay, Cuba; to Naval Air Station, Lakehurst, N. J.

Lt. Comdr. P. N. L. Bellinger, U.S.N.—Detached Aircraft Squadrons, Battle Fleet, to Aircraft Squadrons, Scouting Fleet.

Lt. Harry F. Carlson, U.S.N.—Detached Aircraft Squadrons, Scouting Fleet; to Naval Air Station, Anacostia, D. C.

Lt. George Kirkland, U.S.N.—Detached U.S.S. Langley; to Naval Academy, Annapolis, Md.

Lt. William K. Patterson, U. S. N.—Detached Naval Air Station, Hampton Roads, Va.; to Aircraft Squadrons, Scouting Fleet.

Lt. Van Hubert Ragsdale, U.S.N. — Detached Naval Air Station, Pensacola, Fla. to Aircraft Squadrons, Battle Fleet.

Lt. Harold B. Sallada, U.S.N.—Detached Aircraft Squadrons Scouting Fleet; to conn. f.o. U.S.S. Richmond and on board when commissioned.

Lt. John Stanley, U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Aircraft Squadrons, Battle Fleet.

Lt. Guy D. Townsend, U.S.N.—Detached U.S.S. Wright; to Naval Academy, Annapolis, Md.

Lt. (jg) Franklin E. Cook, U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Aircraft Squadrons, Battle Fleet.

Lt. (jg) Cornelius J. O'Connor, U.S.N.—Detached U.S.S. Utah; to Naval Air Station, San Diego, Calif.

Lt. (jg) Grover B. Turner, U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Aircraft Squadrons, Battle Fleet.

Ens. Paul Carle, U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Aircraft Squadrons, Battle Fleet.

Lt. Comdr. Ernest M. Pace Jr. U.S.N.—Detached Naval Aircraft Factory, Philadelphia, Pa.; to Bureau of Aeronautics, Wash., D. C.

Mach. Mark A. Savelle, U.S.N.—Detached Naval Air Station, San Diego, Calif.; to Aircraft Squadrons, Battle Fleet.

Lt. (jg) Olin R. Miner, U.S.N.—Detached U.S.S. Reuben James; to Naval Air Station, Pensacola, Fla.

Lt. Malcom F. Schoeffel, U.S.N.—Detached U.S.S. Aroostook; to Naval Academy, Annapolis, Md.

Lt. John D. Small, U.S.N.—Detached U.S.S. Beaver; to Naval Air Station, Pensacola, Fla.

Lt. Comdr. Henry F. D. Davis, U.S.N.—Detached U.S.S. California; to Naval Aircraft Factory, Philadelphia, Pa.

Lt. (jg) William P. Hepburn, U.S.N.—Detached Rec. Ship New York, N. Y. to Naval Air Station, Pensacola, Fla.

Lt. (jg) Maurice Van Cleave, U.S.N.—Detached Rec. Ship New York, N. Y. to Naval Air Station, Pensacola, Fla.

Lt. (jg) Bernhard H. Wolter, U.S.N.—Detached U.S.S. Langley; resignation accepted 8-6-23.

Ens. Roscoe L. Bowman, U.S.N.—Detached U.S.S. Wyoming; to Naval Air Station, Pensacola, Fla.

Lt. Roland G. Mayer, U.S.N.—Detached Naval Aircraft Factory, Philadelphia, Pa.; to Naval Air Station, Lakehurst, N. J.

### Teams for Air Races

Provisions for the coming Pulitzer, Schneider Cup and International Balloon Races are progressing satisfactorily. On June 25, Lt. F. W. Wead and the pilots assigned to the Schneider Race team were relieved from all other duties, and commenced training for this race, which takes place in England on Sept. 28. Lt. Comdr. M. A. Mitscher has again been placed in charge of the Pulitzer Race team, and early in July pilots will start training for this race.

The Bureau of Aeronautics has been given permission to enter the air races at St. Louis, Oct. 1-3.

### Parachutes for Naval Aviators

Deliveries of parachutes may soon be expected from McCook Field for issue to the aviation personnel of the Navy. In a recent conference in the Bureau it was made known that J. J. Coughlin of the Naval Aircraft Factory, who is an authority on parachutes, will soon make a tour of the various units and stations and hold classes of instruction in parachute work.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# INDEX TO ADVERTISERS


A

Aircraft Service Directory..... 82
American Propeller & Mfg. Co..... 82

C

Classified Adv..... 81
Curtiss Aeroplane & Motor Corp..... 83

E

Ericson Aircraft, Ltd..... 28

H

Hardin, Richard F..... 82
Huff Daland Aero Corp..... 82

L

Levy, James, Aircraft Co..... 82
Loening Aeronautical Engineering Corp..... 62
Ludington Exhibition Co..... 81

M

Martin, The Glenn L., Co..... 84

N

Northrop, Marvin A..... 81

P

Pioneer Instrument Co..... 82

T

Thomas-Morse Aircraft Corp..... 63
Titanine, Inc..... 82

W

Warner, Edward P..... 82
Where to Fly..... 80
Wright Aeronautical Corp..... 64

Y

Yackey Aircraft Co..... 82



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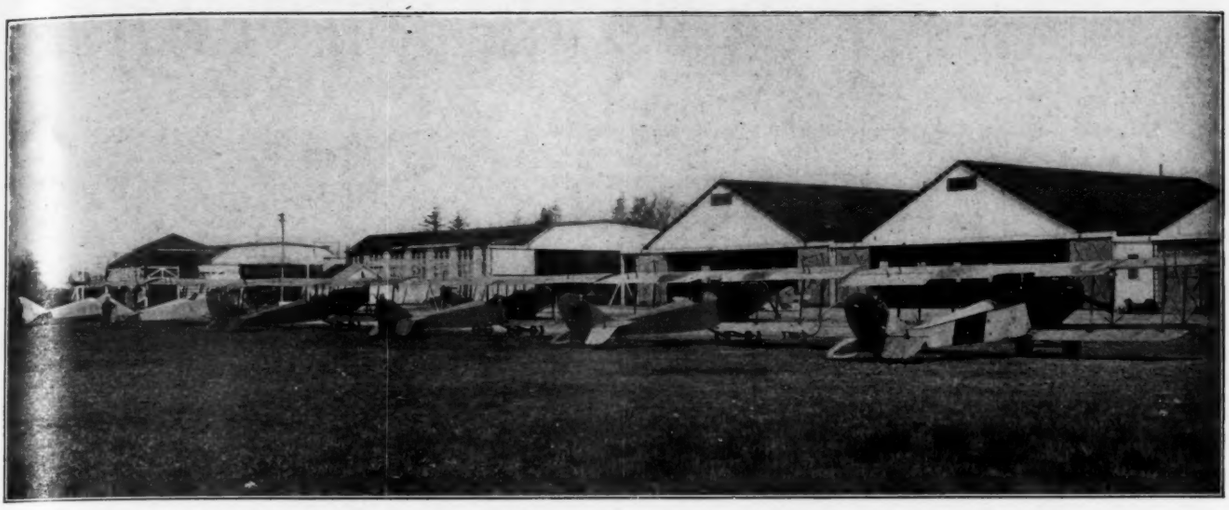

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